1992

MITSUBISHI

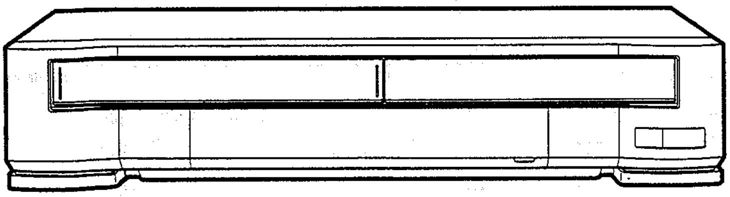
Service Manual

VIDEO CASSETTE RECORDER

VHS
PAL

MODEL

HS-M16(Y)
HS-M16(E)
HS-M16(IR)
HS-M16(S)
HS-M16(B)



Only cassettes marked VHS can be used with this video cassette recorder.

SPECIFICATION

Dimensions	: 425mm(W)×85mm(H)×342mm(D)
Video recording system	: VHS standard
Luminance signal	: Frequency modulation recording
Colour signal	: Low frequency conversion subcarrier phase shift recording
Tape speed	: 23.39mm/sec (SP mode)
Record/playback time	: 4 hours (with E240 cassette)
Video input	: 0.75~1.5 Vpp 75Ω
Video output	: 1.0 Vpp 75Ω
Audio input (line)	: –8dBs 50kΩ unbalanced
Audio output (line)	: –6dBs 1kΩ unbalanced
Weight	: approx. 5.1kg
Acceptable operating temperature	: 5~40°C
Acceptable operating humidity	: 30~80% RH

MODEL / ITEM	HS-M16(Y)	HS-M16(E)	HS-M16(IR)	HS-M16(S)	HS-M16(B)
Power source	AC240V, 50Hz	AC230V, 50Hz	AC220V, 50Hz	AC230V, 50Hz	AC240V, 50Hz
Television system	CCIR-B&G	CCIR-B&G	CCIR-I	CCIR-B&G	CCIR-I
Receiving channel VHF	X1~S2 E2~E12 S3~S20	S1~S3 E2~E12 M1~M10	IRA~S3 -- M1~M10	 E2~E12 --	
UHF	E21~E69	E21~E69	E21-E69	E21~E69	E21~E69
HYPER	--	U1~U31	--		
RF Output channel	E32~E40ch	E32~E40ch	I32~I40ch	E32~E40ch	I32~I40ch

MITSUBISHI ELECTRIC CORPORATION

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DISASSEMBLY

1.Removal of Top Cover

A.Remove four screws (ⓐ ~ ⓓ) retaining the top cover.

B.Gently expand the bottom edges of the top cover, pivot cover forward, then slide toward rear in the direction of the arrows.

2. Removal of Front Panel

A.Remove the top cover.

B.Unfasten six snaps (ⓔ ~ ⓙ), and remove the front panel in the direction shown by the arrows.

3.Installation of Front Panel

A.Check that the door arm is in low position.

B.While holding the Cassette door open, mount the front panel to the VCR and fasten six snaps (ⓔ ~ ⓙ) using gentle pressure to the front panel.

4.Removal of Bottom Cover

A.Remove eight screws (ⓚ ~ ⓡ) retaining the bottom cover.

B.Remove the bottom cover.

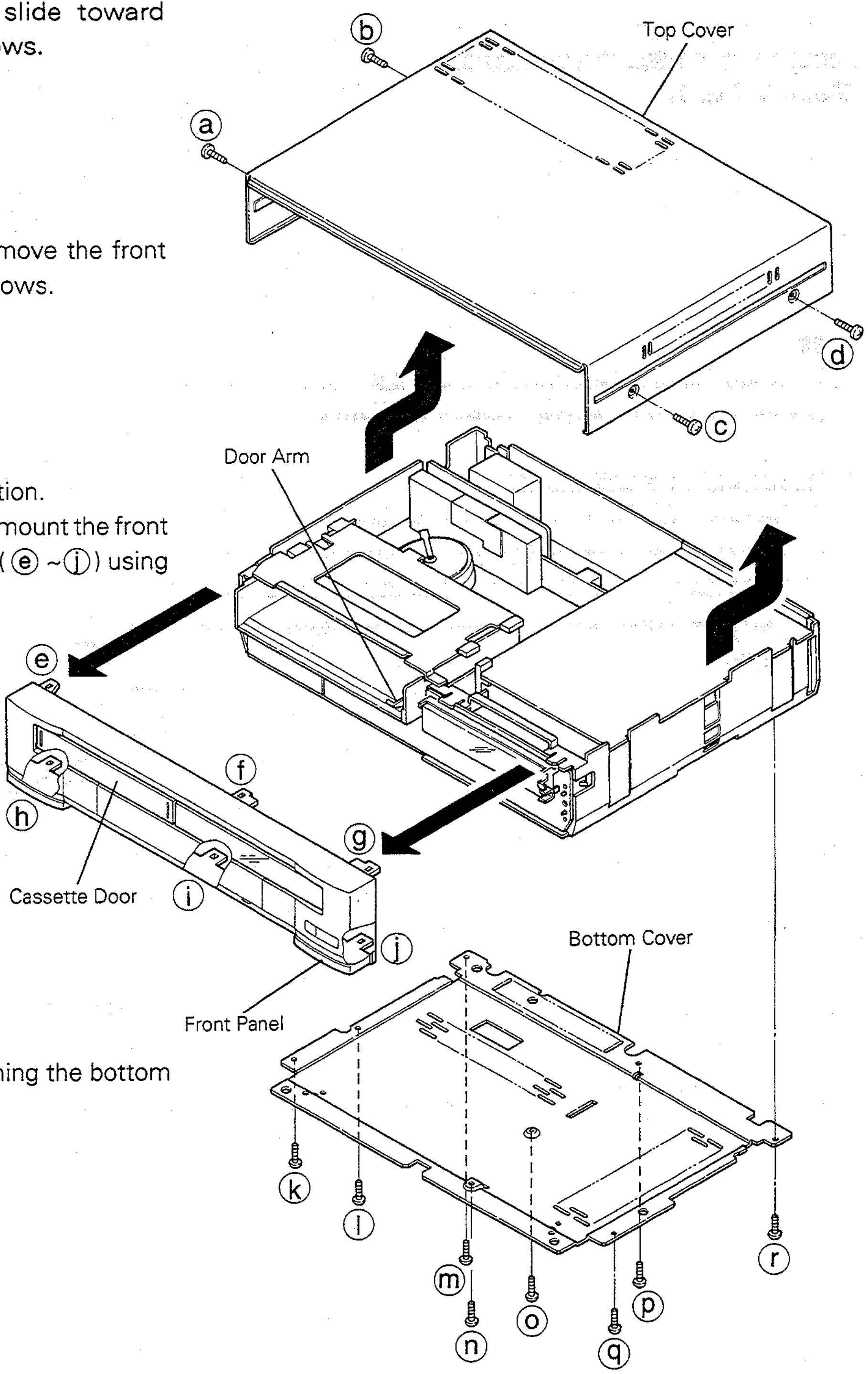


Fig.1

SERVICING THE PRINTED CIRCUIT BOARDS

CAUTION: BEFORE ATTEMPTING TO REMOVE OR REPAIR ANY PCB, UNPLUG THE A.C. SOURCE.

Location of Printed Circuit Boards
(Refer to Fig. 2)

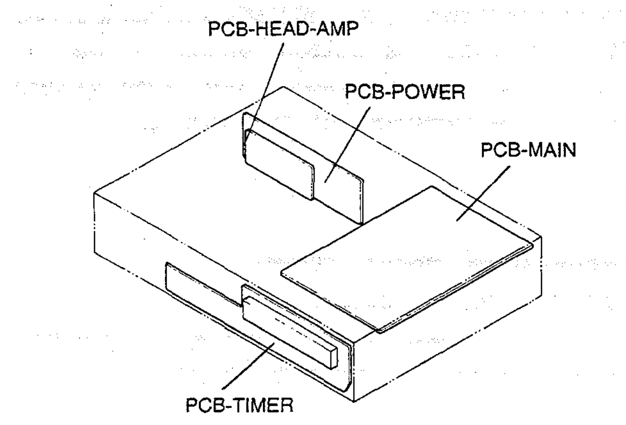

PCB-HEAD-AMP
PCB-POWER
PCB-MAIN
PCB-TIMER

Fig. 2

Note:

Be careful when disconnecting the flat cable connectors to avoid possible contact problems.

1. Removal of PCB-MAIN

A. Remove the top cover. (Page 1, Item 1)
B. Remove five screws (ⓐ~ⓔ), as shown in Fig.3.
C. Pivot the PCB-MAIN in the direction of the arrow.
D. Hang the edge of PCB-MAIN to the holder on the frame.

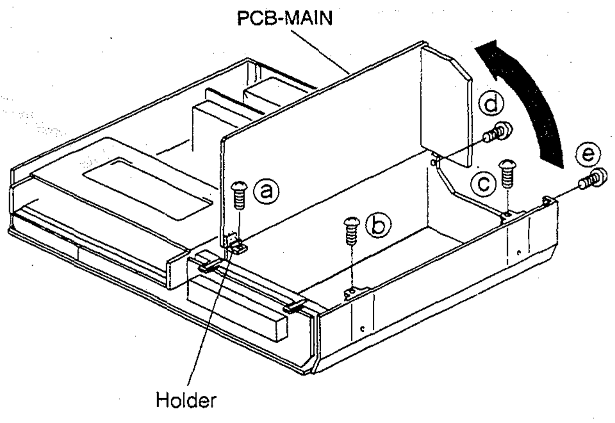

PCB-MAIN
ⓐ
ⓑ
ⓒ
ⓓ
ⓔ
Holder

Fig. 3

2. Removal of PCB-TIMER

A. Remove the front panel. (Page 1, Item 2)

B. Unfasten four stoppers (ⓐ~ⓓ), and remove the PCB-TIMER, as shown in Fig. 4.

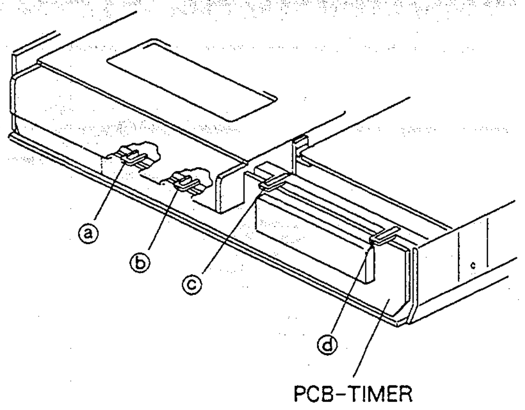


Fig. 4

3. Removal of PCB-HEAD-AMP

A. Remove the top cover. (Page 1, Item 1)

B. Lift the shield cover-A upward to remove it.

C. Disconnect the FPC cable by gently pulling cover-C of the connector $\boxed{\text{GB}}$, as shown in Fig. 5.

D. Remove three screws (ⓐ~ⓒ) retaining the lead wire and the PCB-HEAD-AMP.

E. To service the solder side, remove the shield cover-B, use the extension cord (859C344O40) and ground the lead wire, as removed in above para. D.

F. To service the component side, unsolder four soldering points of the shield case and remove the shield case.

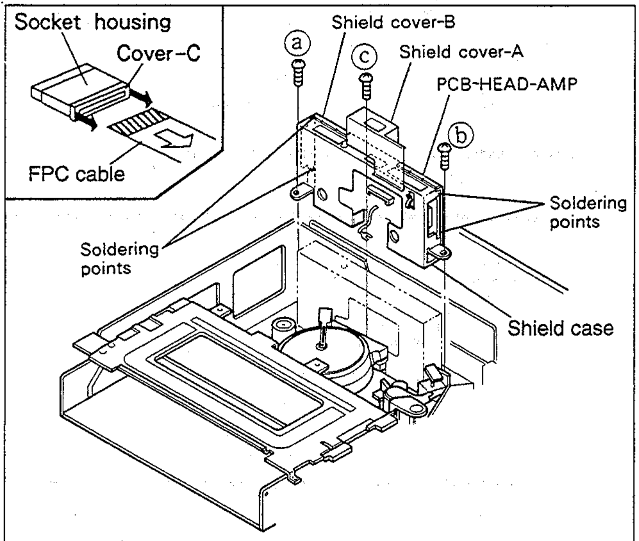

Socket housing
Cover-C
FPC cable
ⓐ
Shield cover-B
ⓒ
Shield cover-A
PCB-HEAD-AMP
ⓑ
Soldering points
Soldering points
Shield case

Fig. 5

4. Removal of PCB POWER

A. Remove the top cover. (Page 1, Item 1)

B. Remove three screws (ⓐ~ⓒ) retaining the PCB POWER, as shown in Fig. 6.

C. Remove the holder of AC power cord from the base chassis and lift the PCB POWER upward.

D. To service the component side, remove three screws (ⓓ~ⓕ) retaining the heat sink.

CAUTION:

Power regulators are damaged if power supply is turned on without installing the heat sink.

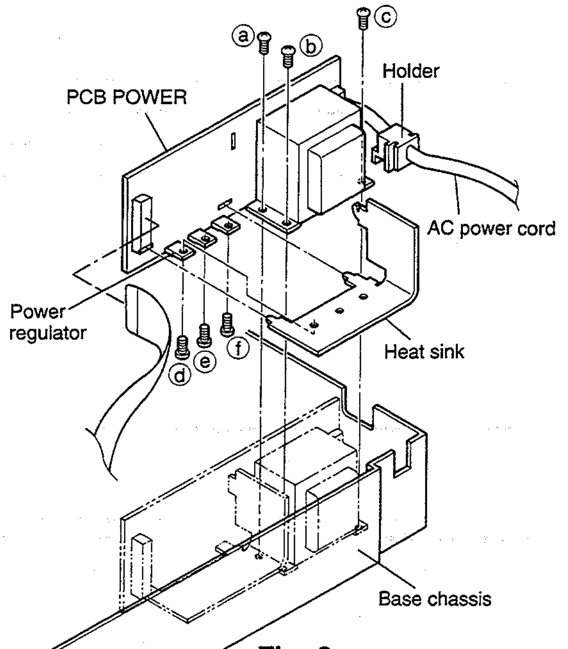
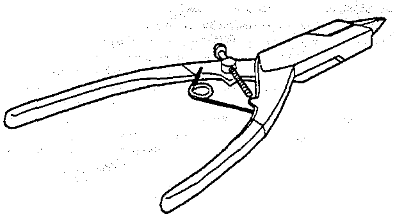
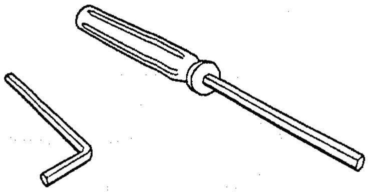
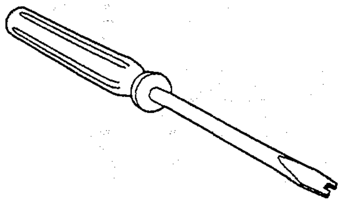
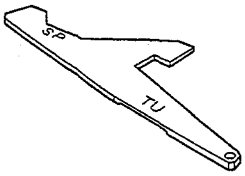
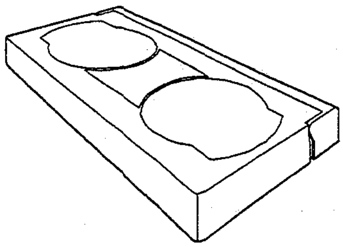
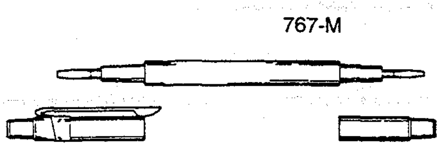
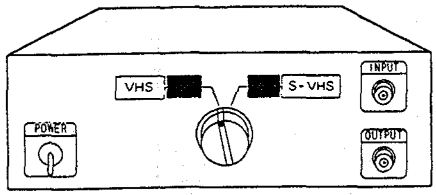
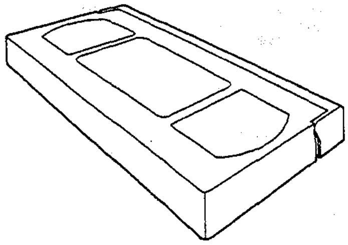

ⓐ
ⓑ
ⓒ
Holder
PCB POWER
AC power cord
Power regulator
ⓓ
ⓔ
ⓕ
Heat sink
Base chassis

Fig. 6

MECHANICAL ADJUSTMENT TOOLS

	PURPOSE	METHOD
Grip ring fixer **(859C347050)** 	A tool for preventing the grip ring from opening excessively.	While opening the grip ring with the tips of this tool, install the grip ring on to the shaft.
Hex Keys(1.5mm)  **(859C259020)** **(859C259050)**	The hex keys are used for tightening or removing hexagonal socket head screws which fasten the guide rollers.	Insert the given size(1.5mm) hexagonal socket and turn.
Adjustment Driver **(859C259080)** 	For adjustment of guide rollers.	Carefully insert and adjust guide rollers.
Reel disk Adj. Jig **(859C342020)**  	The height gauge is used for measuring height and parpendicularity of the reel disk and Take up guide arm.	The gauge is applied to the part being measured.
BackTension Gauge **(859C345080)** 	The back tension gauge is used for measuring the tension of the tape on the supply side.	Load this gauge in the cassette housing and run in the play mode. Read the gauge indicator.
Extension Cord **(859C344040)**	For PCB-HEAD AMP service.	Use when repair of the PCB-Head Amp is necessary.
Cotton gloves	For changing, cleaning and handling of drum, heads and guides.	Use when handling all parts in the tape path.

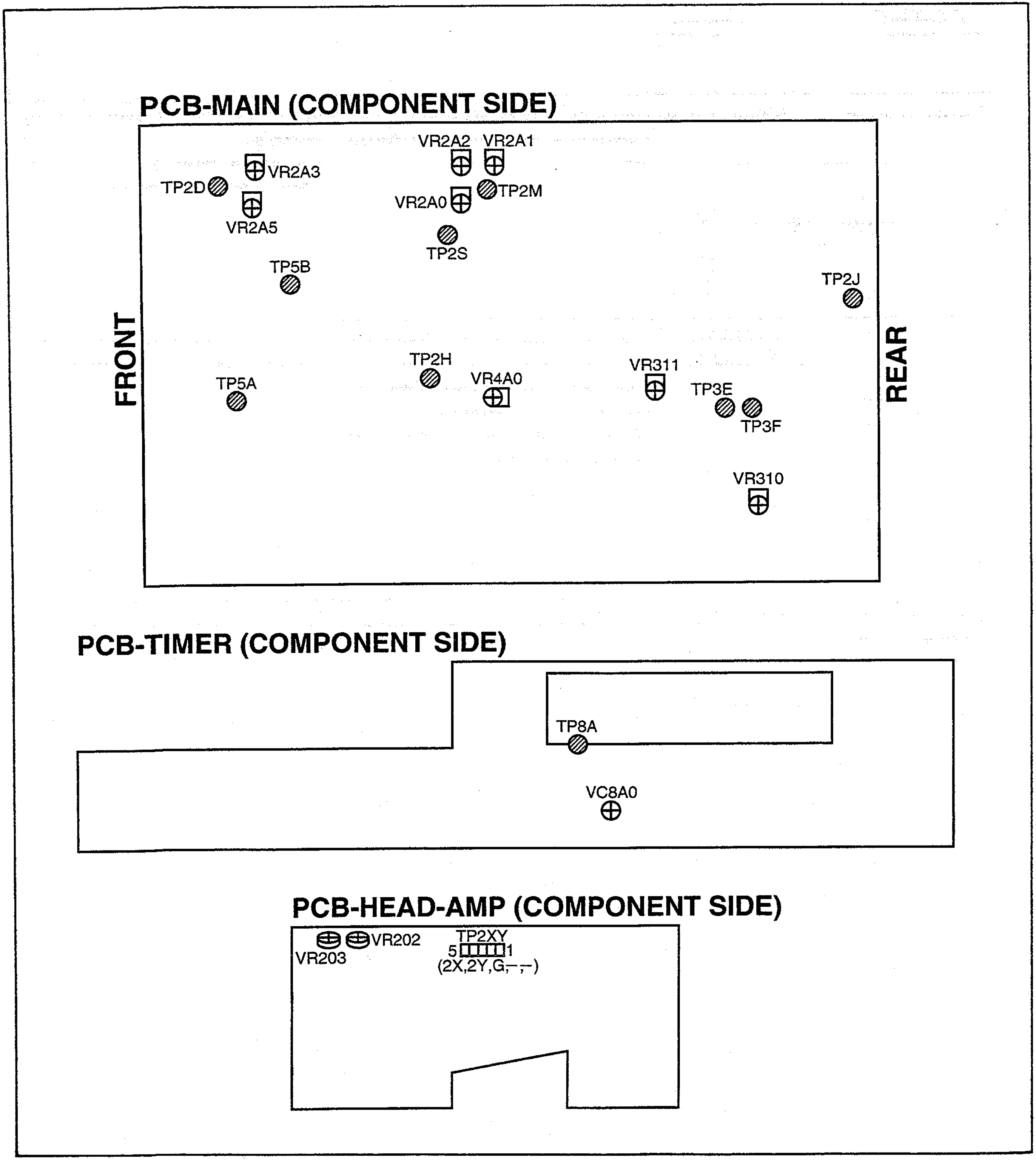
ELECTRICAL ADJUSTMENT TOOLS

	PURPOSE	METHOD
Adjustment Driver (859C338000)  	The adjustment driver is intended to adjust variable resistors, trimmers, transformers etc. in the circuitry.	Select a tip suitable for the particular head of the component concerned and adjust.
Carrier Checker (859C346050)  	Used for the adjustment or inspection of the carrier set deviation.	Use in conjunction with the oscilloscope. For detail refer to the service manual or the attached data.
Alignment Tape (PAL:859C339010) (NTSC:859C339000) 	Standard signals(VHS Standard) are recorded on the alignment tape and reproduced when required in the adjustment of Y/C circuit, audio circuit and interchangeability alignment.	Install and run in the play mode, the same as for an ordinary tape.
Record Current Adjustment Jig (859C347080)	For Y/C Recording Level adjust .	For Y/C Recording Level adjustment.

ELECTRICAL ADJUSTMENT

Circuit adjustments become necessary, in most cases, due to the wear of mechanical parts or following the replacement of critical components such as the video-head. Certain circuit defects can often cause circuit adjustments to vary considerably. Should this occur, be sure to determine the nature of the defect and repair prior to proceeding with adjustments.

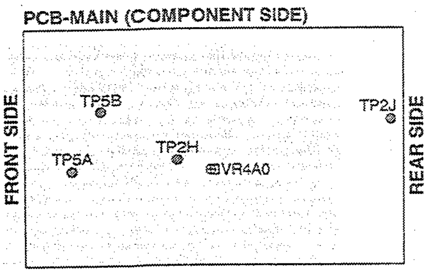
Always use the test equipment recommended for a given adjustment procedure. If the appropriate test equipment is not available, it is recommended that adjustments NOT be attempted. Refrain from the indiscreet adjustment of circuit adjustment controls unless properly equipped to do so.

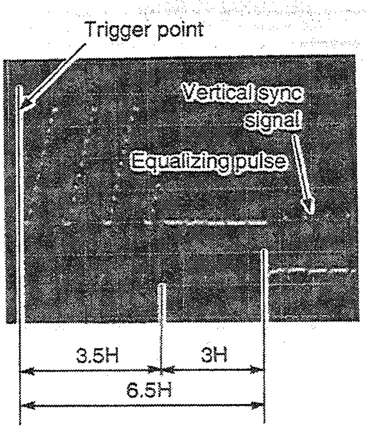

PCB-MAIN (COMPONENT SIDE)
VR2A2
VR2A1
VR2A3
TP2D
TP2M
VR2A0
VR2A5
TP2S
TP5B
TP2J
FRONT
REAR
TP2H
VR4A0
VR311
TP5A
TP3E
TP3F
VR310
PCB-TIMER (COMPONENT SIDE)
TP8A
VC8A0
PCB-HEAD-AMP (COMPONENT SIDE)
VR202
VR203
TP2XY
5
1
(2X,2Y,G,–,–)

[Servo Circuit] 1.Playback Switching Point	**Adjustment purpose:** Video switch over timing during playback. **Symptom when incorrectly adjusted:** Switching noise or jitter on the reproduced picture.

Measuring instrument and condition		VCR setup condition	
Oscilloscope (Probe 10:1)		Input signal	---
Test point	TP2J	Using tape	Alignment tape (grey scale step signal)
EXT trigger	TP2H	VCR condition	Playback
Measurement range	DIV 20mV TIM 50µ s	Using Jig.	---

1. Short-circuit TP5A and TP5B.
   Confirm that the "DTR" displayed in Fluorescent Display flashed fast.
2. Observe TP2J.
3. Set the oscilloscope's slope to (–).
4. Adjust VR4A0 so that the trigger point is located at 6.5±1.0H before the vertical synchronizing signal.

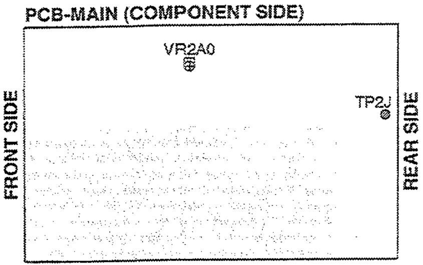


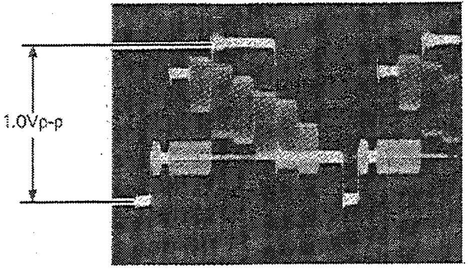


[Y/C Signal Circuit] 2.EE Output Level	**Adjustment purpose:** Output level of video signal at Stop mode. **Symptom when incorrectly adjusted:** Too bright or too dark image: colour signal is produced incorrectly.

Measuring instrument and condition		VCR setup condition	
Oscilloscope (Probe 10:1)		Input signal	RF signal (colour bar)
Test point	TP2J	Using tape	---
EXT trigger	---	VCR condition	Stop
Measurement range	DIV 20mV TIM 10µ s	Using Jig.	---

1. Be certain that nothing is connected to the EURO AV socket
2. Observe TP2J.
3. Adjust VR2A0 so that the video signal is 1.0Vp-p.

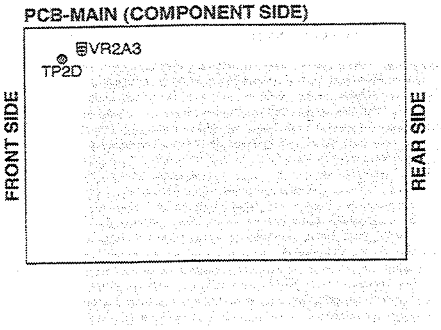


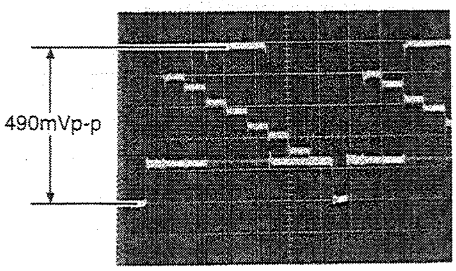


3.Clamp	**Adjustment purpose:** Set the level of video signal. **Symptom when incorrectly adjusted:** Blur image, white streaking, black streaking.

Measuring instrument and condition		VCR setup condition	
Oscilloscope (Probe 10:1)		Input signal	RF signal (colour bar)
Test point	TP2D	Using tape	---
EXT trigger	---	VCR condition	Stop
Measurement range	DIV 10mV TIM 10µs	Using Jig.	---

1. Observe TP2D.
2. Adjust VR2A3 so that the amplitude of the waveform is 490mVp-p.

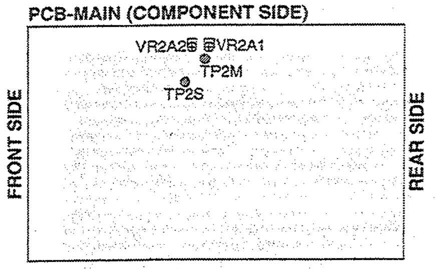

PCB-MAIN (COMPONENT SIDE)
VR2A3
TP2D
FRONT SIDE
REAR SIDE

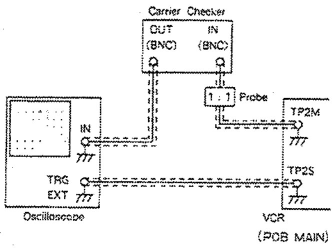


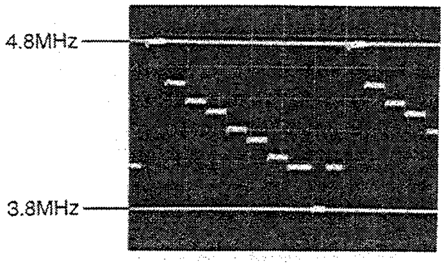
4.Carrier set, Deviation	**Adjustment purpose:** FM carrier frequency and frequency deviations. **Symptom when incorrectly adjusted:** Too bright or too dark image: colour signal is reproduced correctly. Horizontal noise or out of sync.

Measuring instrument and condition		VCR setup condition	
Oscilloscope (Probe 1:1)		Input signal	RF signal (colour bar)
Test point	TP2M	Using tape	---
EXT trigger	TP2S	VCR condition	Stop
Measurement range	DIV 0.2V TIM 10µ s	Using Jig.	Carrier checker

1. Observe TP2M via the carrier checker.
2. Adjust VR2A2 and VR2A1 so that the response waveform 3.8MHz line and 4.8MHz just touch each of white lines on the oscilloscope.


PCB-MAIN (COMPONENT SIDE)
VR2A2
VR2A1
TP2M
TP2S
FRONT SIDE
REAR SIDE


Carrier Checker
OUT (BNC)
IN (BNC)
1:1 Probe
TP2M
IN
TRG EXT
TP2S
Oscilloscope
VCR (PCB MAIN)



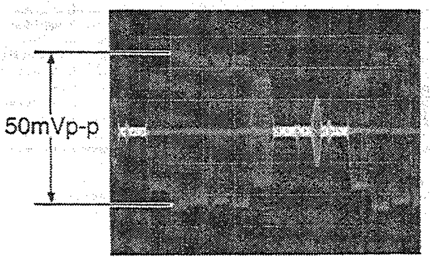
5.Y/C Recording Level

Adjustment purpose: Level of video signal just before recording on tape.

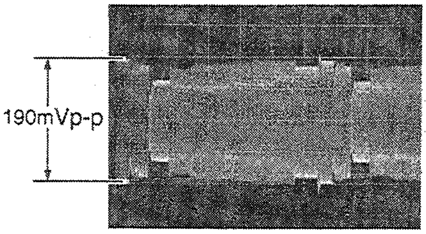
Symptom when incorrectly adjusted: Low luminance signal S/N ratio, beats, colour bounding of chrominance signal or flicker.

Measuring instrument and condition		VCR setup condition	
Oscilloscope (Probe 1:1)		Input signal	RF signal (colour bar)
Test point	TP connector pin ⑤ and pin ④	Using tape	A tape
EXT trigger	TP2S	VCR condition	Record
Measurement range	DIV 10mV TIM 10μ s	Using Jig.	REC Current ADJ. JIG

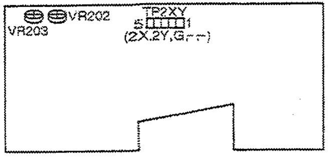
1. Observes TP connector pin ⑤ and pin ④ via the REC current ADJ. JIG.
2. Turn VR203 fully counter clockwise as seem from the top side.
3. Adjust VR202 so that the amplitude of cyan level is 50mVp-p.

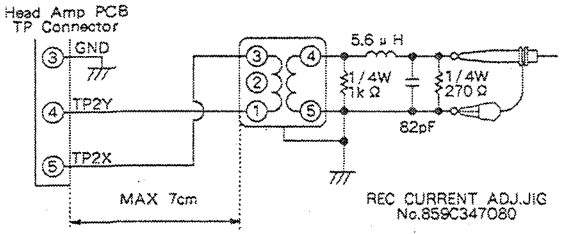


4. Set the oscilloscope's probe to 10:1.
5. Set the oscilloscope's volt range to 5mV/div.
6. Adjust VR203 so that the amplitude of horizontal sync is 190mVp-p.



PCB-HEAD-AMP (COMPONENT SIDE)


VR202
VR203
TP2XY
5
1
(2X,2Y,G,-,-)


Head Amp PCB
TP Connector
GND
TP2Y
TP2X
③
④
⑤
①
②
MAX 7cm
5.6 μH
1/4W
1kΩ
1/4W
270Ω
82pF
REC CURRENT ADJ.JIG
No.859C347080

6. Playback Video Output Level

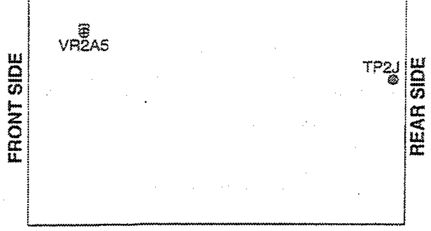
Adjustment purpose: Video output level during playback.

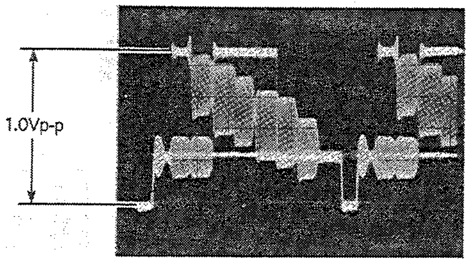
Symptom when incorrectly adjusted: Colour signal is not correctly reproduced.

Measuring instrument and condition		VCR setup condition	
Oscilloscope (Probe 10:1)		Input signal	---
Test point	TP2J	Using tape	Alignment tape (colour bar)
EXT trigger	---	VCR condition	Playback
Measurement range	DIV 20mV TIM 10μ s	Using Jig.	---

1. Be certain that nothing is connected to the EURO AV socket
2. Observe TP2J.
3. Adjust VR2A5 so that the amplitude of waveform is 1.0Vp-p.

PCB-MAIN (COMPONENT SIDE)


VR2A5
TP2J
FRONT SIDE
REAR SIDE



[Audio Circuit]

7.Playback Audio Level

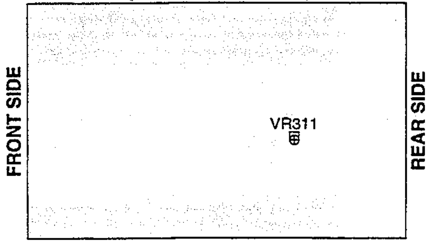
Adjustment purpose: Audio level during playback.

Symptom when incorrectly adjusted: Too loud or too low audio level during playback.

Measuring instrument and condition		VCR setup condition	
Audio Tester		Input signal	EXT signal (colour bar)
Test point	EURO AV socket pin ①	Using tape	Alignment tape (1kHz audio signal)
EXT trigger	---	VCR condition	Playback
Measurement range	---	Using Jig.	---

1. Observe EURO AV socket pin ①.
2. Adjust VR311 so that the audio output level is −6dBs (388mVr.m.s.). (0dBs=1mW600Ω:0.775Vr.m.s.)
3. Check that the level fluctuation is less than ±1dBs. If the level fluctuation is over ± 1 dBs then check that the mechanical adjustment of A/C HEAD slant.

PCB-MAIN (COMPONENT SIDE)



8.Audio Bias Level

Adjustment purpose: Audio bias level setting for playback.

Symptom when incorrectly adjusted: Poor audio response in high frequency area.

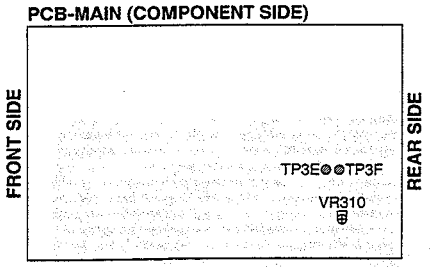
Measuring instrument and condition		VCR setup condition	
Audio tester		Input signal	---
Test point	TP3E TP3F	Using tape	A tape
EXT trigger	---	VCR condition	Record
Measurement range	---	Using Jig.	High pass filter

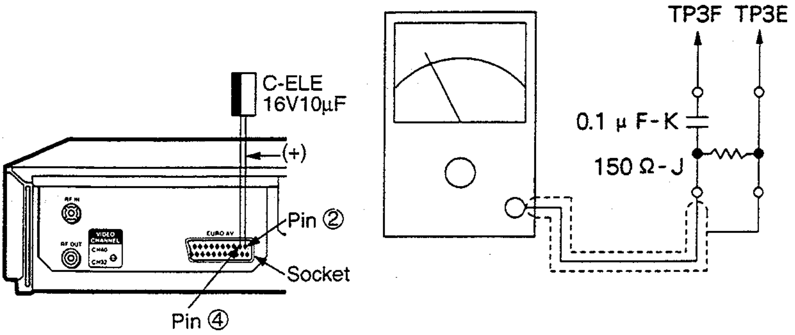
1. Short circuit EURO A/V socket pin ② (AUDIO IN) and pin ④(GND) electrolytic capacitor (16V or more 10μF).
2. Observes TP3E and TP3F via high pass filter.
3. Confirm that the monitor TV etc. does not affect the indication of the audio tester, and then adjust VR310 so that the level to be 2.6mVr.m.s.

Note 1:
Be careful that the audio tester housing does not touch the VCR chassis.

Note 2:
Do not set the VCR to PLAY mode when the audio tester is connected.
(The audio amplifier will be overloaded.)

PCB-MAIN (COMPONENT SIDE)



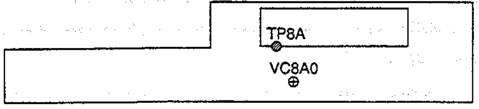


[Timer Circuit] 9.Clock OSC Frequency	**Adjustment purpose:** Accuracy of clock. **Symptom when incorrectly adjusted:** Poor clock accuracy.

Measuring instrument and condition		VCR setup condition	
Frequency counter		Input signal	---
Test point	TP8A	Using tape	---
EXT trigger	---	VCR condition	Stand by
Measurement range	PERIOD mode	Using Jig.	---

1. Observe TP8A.
2. Adjust VC8A0 so that the period is 5.859375± 0.000024msec.

PCB-TIMER (COMPONENT SIDE)



MECHANICAL ADJUSTMENT AND REPLACEMENT

1. Cleaning of Deck

The following parts require cleaning whenever serviced to maintain satisfactory performance.

1-1 Video Head

A. Clean the video heads in the following method if dust and other foreign objects on the video heads disturb the normal playback of images:
Dampen video head cleaning cloth with alcohol. Hold the cloth against the drum and turn the drum slowly counterclockwise to clean.
Note:
Do not directly touch the head attached to the upper drum. The head is very hard but brittle to impact, especially in the vertical direction.
Do not apply force in the vertical direction.

B. Allow residual alcohol to dry thoroughly before running tape. Otherwise, the liquid may stick to and damage the tape.

1-2 Tape Transport(Refer to Fig. 1-1.)

Clean the following parts of the tape transport.

1. Tension regulation arm S
2. Tension arm
3. Supply guide pole
4. FE head
5. Impedance roller
6. Supply guide roller
7. Supply slant pole
8. Upper and lower drum
9. Takeup slant pole
10. Takeup guide roller
11. A/C head
12. Takeup guide pole
13. Pinch roller
14. Capstan shaft
15. Takeup guide arm
16. Tension regulation arm T

A. Clean the tape transport with gauze dampened with alcohol, except the supply guide roller, takeup guide roller and pinch roller. If Guide rollers and pinch roller are stained with dust, clean them with dry gauze or exchange them for new parts.

B. Allow residual alcohol to dry thoroughly before running a tape. Otherwise the liquid may stick to and damage the tape.

1-3 Reel Disk Drive System

Clean the reel disk braking surfaces and the reel belt.

A. Clean the reel disk braking surfaces with gauze dampened alcohol.
- After the alcohol dries up completely, perform "Adjustment to Back Tension and Tension Position" (Item 3-1).

B. Reel belt is stained with dust, clean it with dry gauze or exchange it for new part.

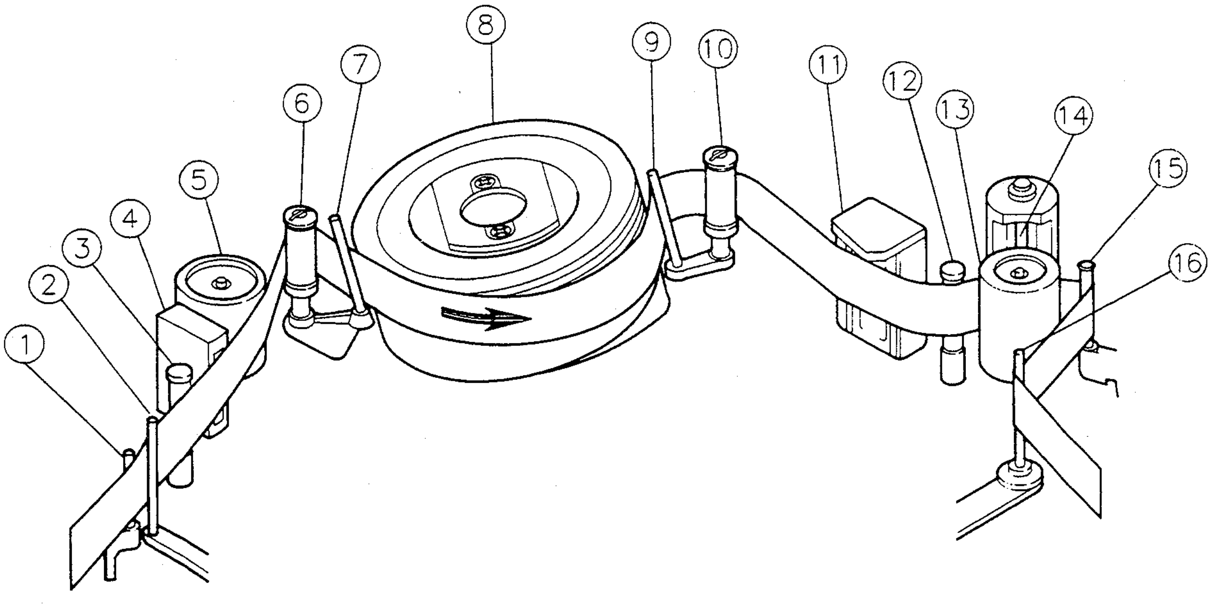


Fig. 1-1

2. Replacement of Major Parts

2-1 Cassette Housing

2-1-1 Removal(Refer to Fig. 2-1-1~2-1-2.)

A. Set the VCR to the eject mode.
B. Remove the top panel, bottom panel, and front panel.
C. Unfasten the snap of the cable holder and remove the cable holder from the cassette housing as shown in Fig.2-1-1.
D. Unscrew four cassette housing fastening screws (ⓐ ~ ⓓ). Raise the cassette housing slowly in the direction shown by the arrow.(Refer to Fig. 2-1-2.)

2-1-2 Installation(Refer to Fig.2-1-1~2-1-3.)

A. Slowly lower the cassette housing onto the main plate of the deck so that the safety lever enters between the insert guide and the shaft as shown in Fig. 2-1-1.
Align the two positioning holes(ⓔ , ⓕ) and the two U holes (ⓖ , ⓗ) located on the cassette housing with the matching holes in the deck.
B. In step A above, if the front loading gear of the cassette housing does NOT engage the boss on the main plate, carefully push the gear toward the front of the VCR using a small-diameter screwdriver, as illustrated in Fig. 2-1-3. If the gear still will not engage, rotate the Front Loading Gear a few degrees from below the deck until the gear engages the boss correctly.
C. Fasten the housing to the deck with the four screws(ⓐ ~ ⓓ).(Refer to Fig. 2-1-2.)

2-2 Lock arm and Drive gear

2-2-1 Removal(Refer to Fig. 2-1-3~2-2.)

A. Unfasten four snaps(ⓐ ~ ⓓ)as shown in Fig. 2-1-3, and remove the side plate TU.
B. Turn the FL SW lever clockwise to separate the FL SW lever from the drive gear, and pull the lock arm and drive gear to remove them from the shaft as shown in Fig. 2-2.

2-2-2 Installation(Refer to Fig. 2-1-3~2-2.)

A. Install the drive gear on the shaft as shown in Fig. 2-2.
B. Line the matching mark on the drive gear and beginning of gear section on the lock arm as shown in Fig. 2-2, and install the lock arm.
C. Install the side plate TU to the cassette housing, and secure it with four snaps(ⓐ ~ ⓓ)as shown in Fig. 2-1-3.

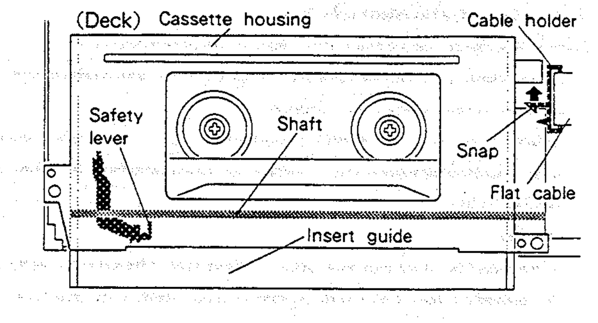

(Deck)
Cassette housing
Cable holder
Safety lever
Shaft
Snap
Flat cable
Insert guide

Fig. 2-1-1

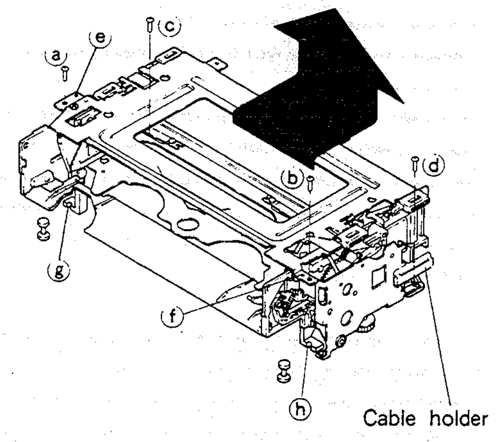

ⓐ
ⓔ
ⓒ
ⓑ
ⓓ
ⓖ
ⓕ
ⓗ
Cable holder

Fig. 2-1-2

F0D002

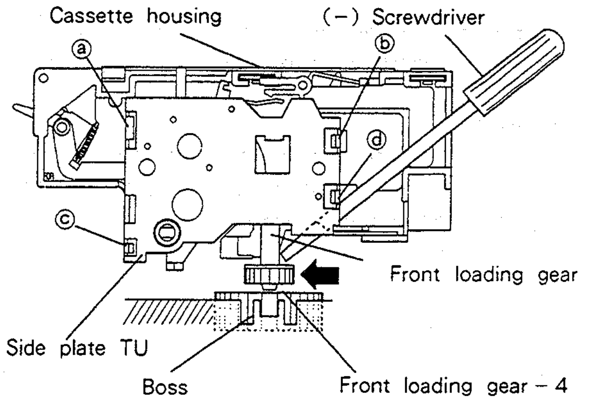

Cassette housing
(−) Screwdriver
ⓐ
ⓑ
ⓓ
ⓒ
Front loading gear
Side plate TU
Boss
Front loading gear − 4

Fig. 2-1-3

F0D003

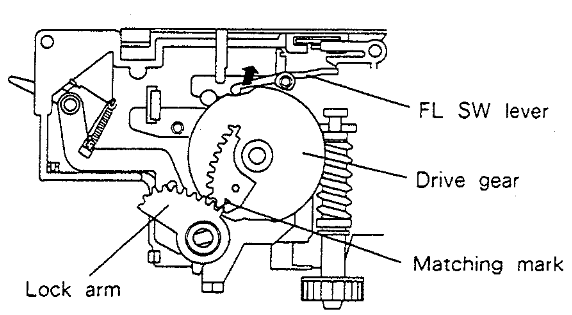

FL SW lever
Drive gear
Matching mark
Lock arm

Fig. 2-2

2-3 Drum Assembly

2-3-1 Removal(Refer to Fig. 2-3-1~2-3-3.)

A. Unscrew the brush fastening screw and remove the brush.(Refer to Fig. 2-3-1.)

B. Unscrew two fastening screws(ⓐ , ⓑ) and remove the PCB-HEAD AMP which is connected to the drum assembly.

Note:

The cable and connector between the drum and head amplifier may be damaged if the cable is pulled strongly, as the cable is short.

Remove the shield cap of the PCB, raise the PCB slightly and disconnect the FPC cable.

(Removal method for the FPC cable connector and stopper is shown in Fig. 2-3-3.)

Disconnect the ground wire and remove the PCB-HEAD AMP.

C. Unscrew three drum fastening screws(ⓒ ~ ⓔ)from the reverse side of the deck.(Refer to Fig. 2-3-2.)

D. Remove the drum assembly by raising it with care not to touch other parts around the drum assembly.

E. Disconnect the connectors from the drum assembly. (Refer to Fig. 2-3-3.)

2-3-2 Installation (Refer to Fig. 2-3-1,2-3-2.)

A. Connect the connectors to a new drum assembly.

B. Place the new drum assembly on the main plate of the deck slowly with care not to touch other parts.

C. Fasten the drum assembly with three fastening screws(ⓒ ~ ⓔ)on the reverse side of the deck. (Refer to Fig. 2-3-2.)

D. Connect the PCB-HEAD AMP to the drum assembly and fasten the PCB with two screws(ⓐ , ⓑ).(Refer to Fig. 2-3-1.)

Note:

Conduct the mechanism interchangeability adjustment outlined in Para.3 to give optimum performance when the drum assembly is replaced.

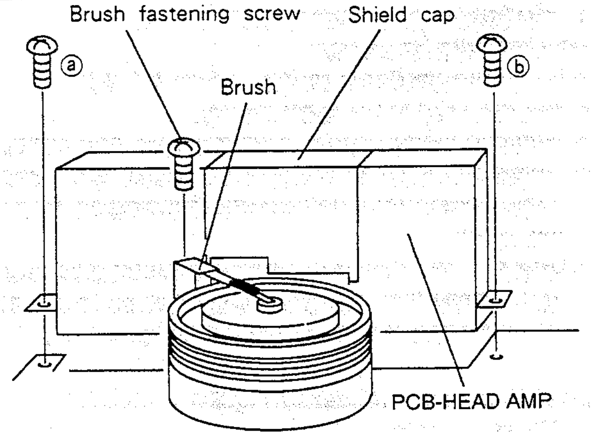


Fig. 2-3-1

F0D007

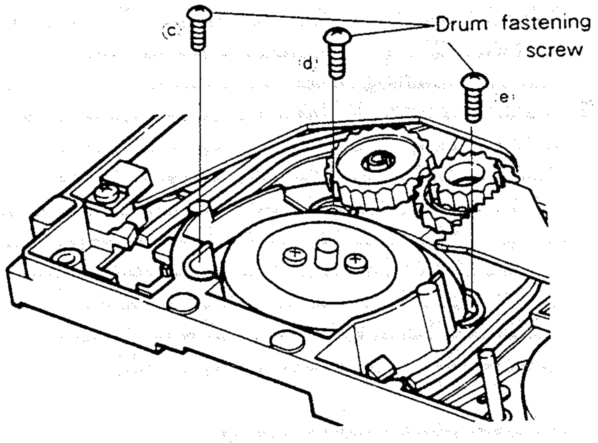


Fig. 2-3-2

F0D008

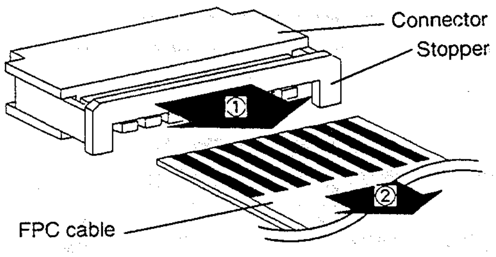


Fig. 2-3-3

F0D009

2-4 Upper Drum

2-4-1 Removal(Refer to Fig. 2-4-1.)

A. Unscrew the brush fastening screw and remove the brush.

B. Unsolder two inside soldered terminals of each head on the upper drum.

C. Unscrew the upper drum fastening screws.

D. Remove the upper drum slowly and carefully.

Note:

If the upper drum is difficult to remove, heat the upper drum fastening screw holes with a soldering iron, and the drum can be easily removed.

2-4-2 Installation(Refer to Fig. 2-4-1.)

Note:

Handle the upper drum carefully as the video heads are fragile.

A. Position the lower drum so that the hole in the shaft faces the operator. Align the upper drum with the lower drum so that the CH1 mark on the upper drum is on the right side, and couple the drums.

B. Fasten the upper drum with two screws.(Tighten the screws alternately.)

C. Solder the terminals not soldered on the upper drum.

D. Clean the video heads as outlined in Para. 1-1.

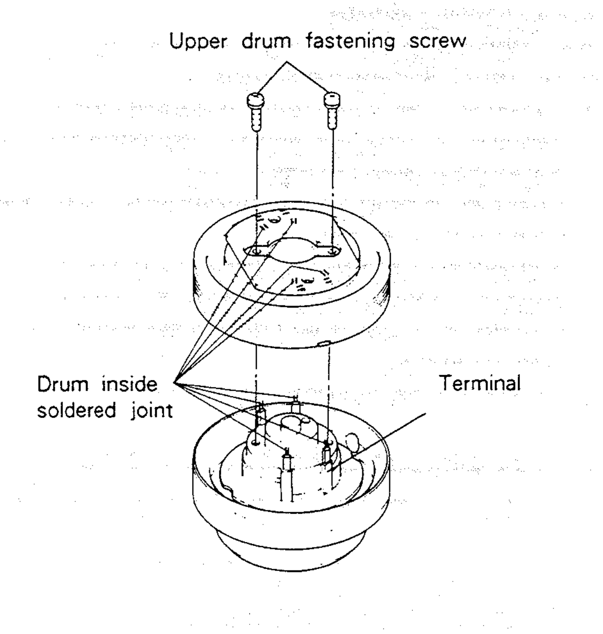


Fig. 2-4-1 F0D010

2-5 Reel Belt(Refer to Fig. 2-5)

A. Remove the reel belt from the capstan motor and the belt pulley.

B. Install a new reel belt.

Note:

Make certain that the new belt is free from grease, before installing.

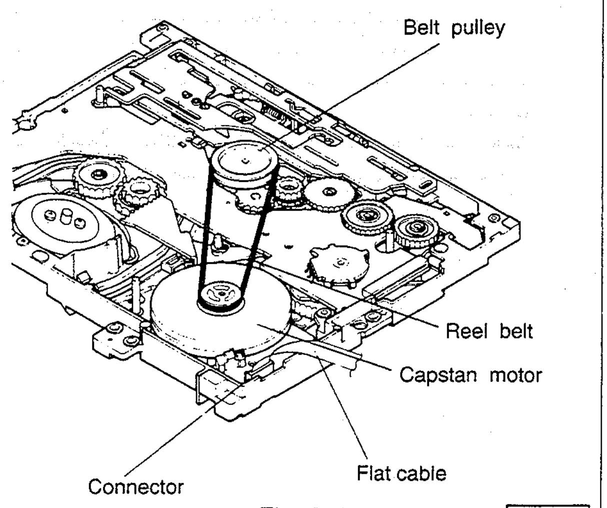


Fig. 2-5 F0D011

2-6 Capstan Motor

2-6-1 Removal(Refer to Fig. 2-5, 2-6)

A. Disconnect the flat cable.

B. Remove the reel belt.(Refer to Fig. 2-5.)

C. Remove three fastening screws shown in Fig. 2-6 and remove the capstan motor.

CAUTION:

Restrain the capstan motor as the three screws are removed, since an un-restrained motor may damage other parts of the deck.

When performing removal or installation of the capstan motor, take care that the outside of the rotor's rim is not greased.(Refer to Fig.2-5.) If greasy components are attached on the outside of the rotor's rim, wipe them off with a dry cloth because they may cause defects during special effects playback.

2-6-2 Installation(Refer to Fig. 2-5, 2-6.)

A. Fasten the motor with three fastening screws.(Refer to Fig. 2-6.)

B. Install the reel belt.

C. Connect the flat cable.

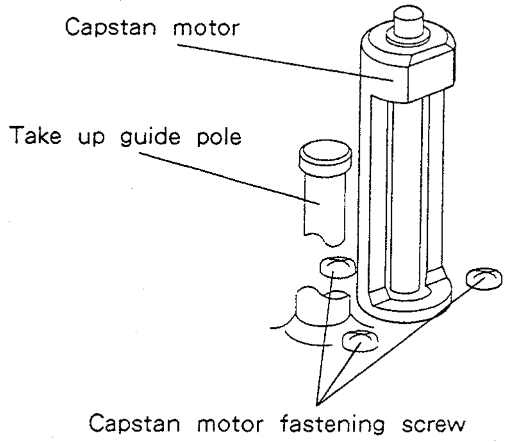


Fig. 2-6 F0D012

2-7 Loading Motor

2-7-1 Removal(Refer to Fig. 2-7-1, 2-7-2.)

A. Set the VCR to the eject mode.
B. Disconnect the wires from the loading motor.
C. Remove two stoppers securing the motor and the motor holder plate.(Refer to Fig. 2-7-2.)
D. Slide the motor and motor holder plate away, and then raise them to remove.
E. Remove the belt-LM from the loading motor and the pulley-L.(TYPE-B only)(Refer to Fig. 2-7-1.)
F. Unscrew two screws and detach the motor holder plate from the motor.
G. Disconnect the coupling from the motor.

2-7-2 Installation(Refer to Fig. 2-7-1~2-7-3.)

A. Fasten the coupling to a new loading motor.(Refer to Fig. 2-7-3.)
B. Fasten the motor holder plate to the motor with two screws.(Refer to Fig. 2-7-1.)
C. Install the belt-LM.(TYPE-B only)
D. Place the motor and motor holder plate in the motor holder to the rest of the deck.
E. Turn the motor shaft so that the coupling on the loading motors matches the worm gear of the motor holder. Slide the loading motor forward and secure it with the stoppers.
F. Solder the leads to the loading motor. (Brown lead wire to the positive terminal and red lead wire to the negative terminal.)

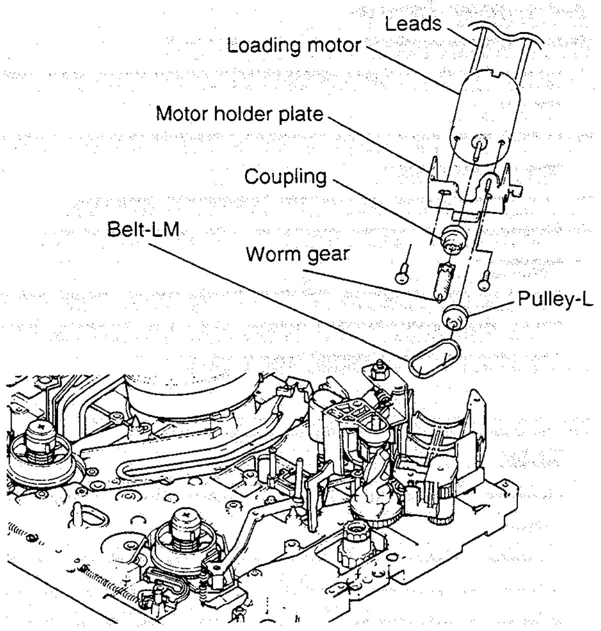

Leads
Loading motor
Motor holder plate
Coupling
Belt-LM
Worm gear
Pulley-L

Fig. 2-7-1

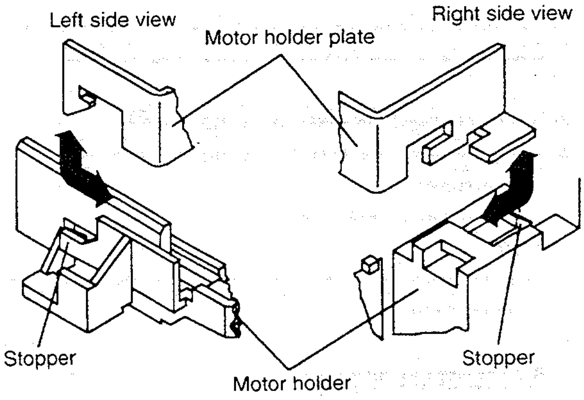

Left side view
Motor holder plate
Right side view
Stopper
Stopper
Motor holder

Fig. 2-7-2

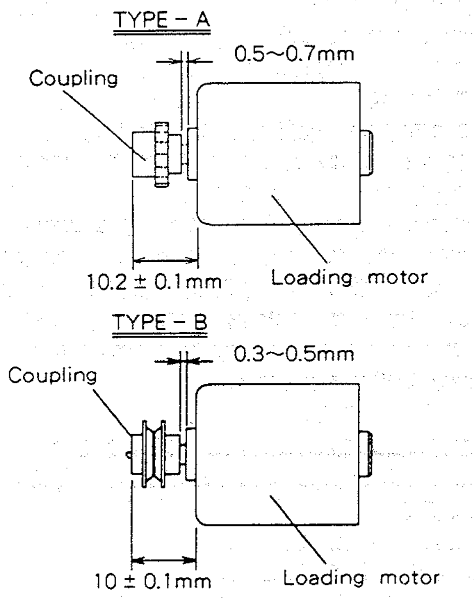

TYPE – A
0.5~0.7mm
Coupling
10.2 ± 0.1mm
Loading motor
TYPE – B
0.3~0.5mm
Coupling
10 ± 0.1mm
Loading motor

Fig. 2-7-3

2-8 Pinch Roller

2-8-1 Removal(Refer to Fig. 2-8-1, 2-8-2.)

A. Set the VCR to the eject mode.

B. Remove the pinch roller arm cap and the grip ring which secures the pinch roller arm assembly.(Refer to Fig. 2-8-1.)

C. Pull the pinch roller arm assembly upwards to remove.

D. Remove the pinch roller cap from the pinch roller arm, and remove the pinch roller. (Refer to Fig. 2-8-2.)

2-8-2 Installation(Refer to Fig. 2-8-1,2-8-2.)

A. Assemble the pinch roller cap and the pinch roller to the pinch roller arm by exercising care with the installation angle of the pinch roller cap and the marking of the Pinch Roller. (Refer to Fig. 2-8-2.)

B. Assemble the pinch roller assembly to the shaft on the main plate.(Refer to Fig. 2-8-1.)

C. Secure the pinch roller arm assembly with the pinch roller arm cap and the grip ring.

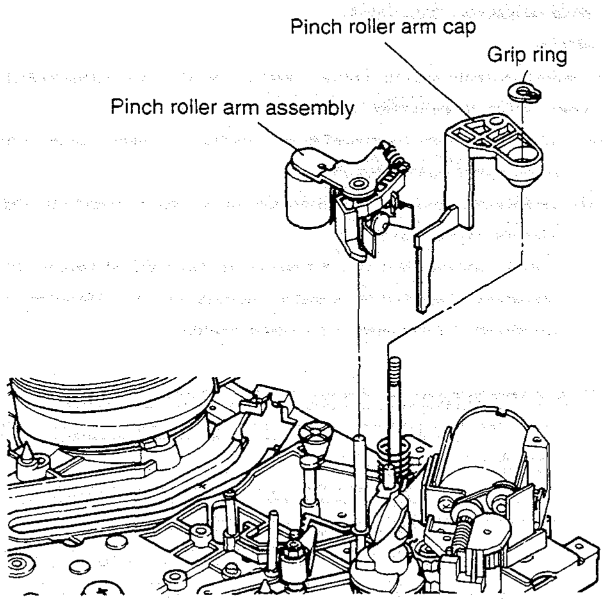

Pinch roller arm cap
Grip ring
Pinch roller arm assembly

Fig. 2-8-1

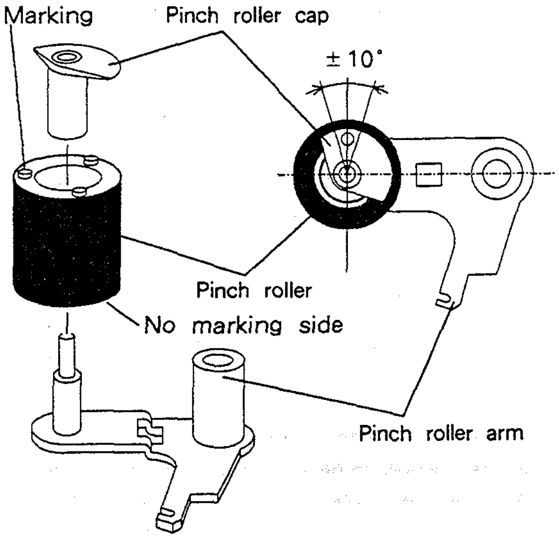

Marking
Pinch roller cap
± 10°
Pinch roller
No marking side
Pinch roller arm

Fig. 2-8-2

F0D017

2-9 Mode Switch

Note:

Replace the mode switch with the VCR in the eject mode.

2-9-1 Removal(Refer to Fig. 2-9-1)

A. Unsolder the five soldered joints of the mode switch from the PCB-DECK.

B. Unfasten two catches fastening the switch to the PCB-DECK assembly.
(Exercise care as the catches may be broken off.)

C. Remove the mode switch slowly while insuring that the soldered joints are all unsoldered.

2-9-2 Installation(Refer to Fig. 2-9-1,2-9-2.)

A. Line the matching marks of the mode switch. (Refer to Fig. 2-9-2.)

B. Finely adjust the mode switch so that continuity at each terminal shall be as given in the illustration.

C. Fasten the switch to the PCB-DECK with care so that the switch does not turn, and secure with two catches.(Refer to Fig. 2-9-1.)

D. Solder the five terminals which connect the mode switch to the PCB-DECK assembly.

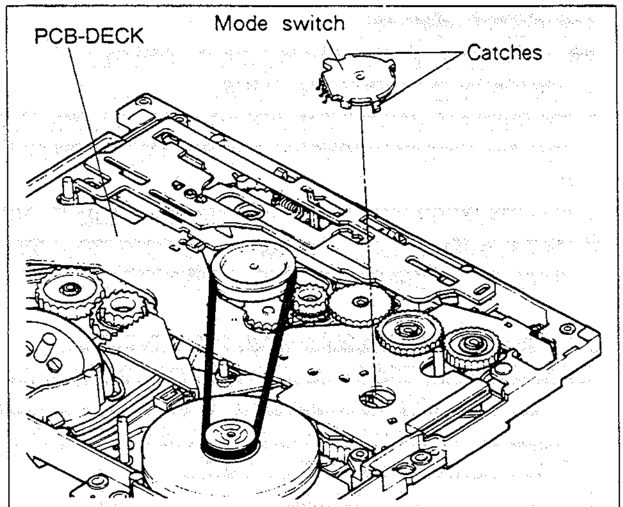

PCB-DECK
Mode switch
Catches

Fig. 2-9-1

F0D018

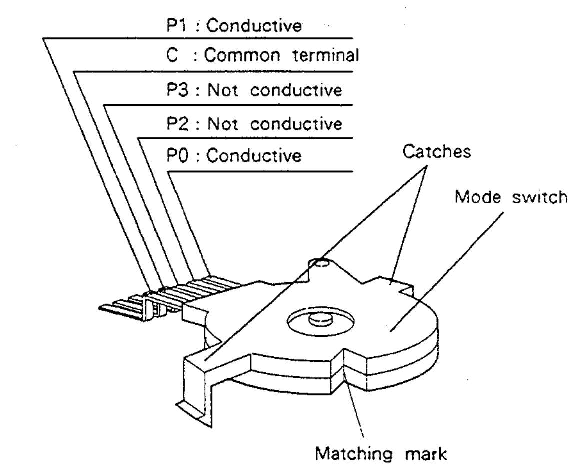

P1 : Conductive
C : Common terminal
P3 : Not conductive
P2 : Not conductive
P0 : Conductive
Catches
Mode switch
Matching mark

Fig. 2-9-2

F0D019

2-10 Supply Reel Disk

2-10-1 Removal (Refer to Fig. 2-10-1~2-10-3.)

A. Remove the cassette housing as in Para. 2-1-1.

B. Unscrew the screw ⓐ which fastens the T band holder. (Refer to Fig. 2-10-1.)

C. Unfasten the catch of the T band holder from the main plate with a small screw driver etc. as shown in Fig. 2-10-2. Raise and remove the T band holder with care not to score or dirty the tension brake belt.

D. Detach the tension spring from the tension arm and the tension lever.(Refer to Fig. 2-10-1.)

E. Remove the grip ring ⓑ which secures the tension arm. Raise the tension arm upward to remove it from the shaft.

F. Detach the tension regulation spring S from the tension regulating arm S and the tension lever.

G. Detach the safety lever spring from the safety lever and the tension lever.

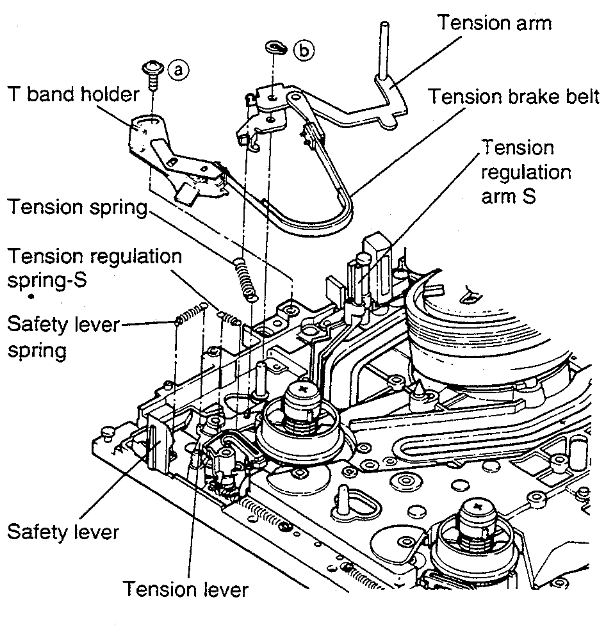

Tension arm
ⓑ
ⓐ
T band holder
Tension brake belt
Tension regulation arm S
Tension spring
Tension regulation spring-S
Safety lever spring
Safety lever
Tension lever

Fig. 2-10-1

H. Raise the tension lever avoiding the main brake S and remove the lever from the shaft.(Refer to Fig. 2-10-3.)

I. Raise the tension regulation arm S and remove it from the shaft.

J. While turning the main brake S slightly clockwise to separate the brake from the supply reel disk, and raise the supply reel disk to remove it from the shaft.(Refer to Fig. 2-10-3.)

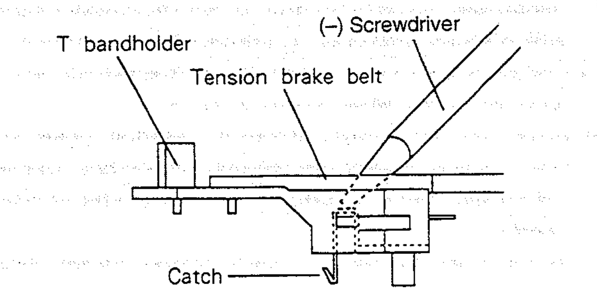

(–) Screwdriver
T bandholder
Tension brake belt
Catch
F0D021

Fig. 2-10-2

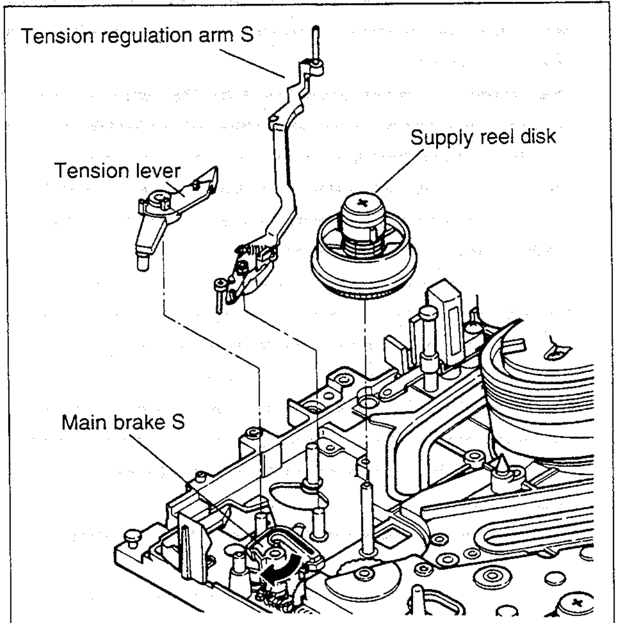

Tension regulation arm S
Supply reel disk
Tension lever
Main brake S

Fig. 2-10-3

2-10-2 Installation(Refer to Fig. 2-10-4~2-10-7.)

A. Turn the main brake S slightly clockwise to separate it from the supply reel disk shaft, and mount the supply reel disk on the shaft so that the reel gear meshes with the gear of the supply reel disk.

B. Assemble the tension regulation arm S to the shaft.

C. Assemble the tension lever to the shaft avoiding the main brake S.

Note:
Install the tension lever so that the pin at the lower part of the lever shall be in front of the slot in the main plate(viewing the front).

D. Fasten the safety lever spring to the safety lever and the tension lever.

E. Fasten the tension regulation spring S to the tension regulation arm S and the tension lever.

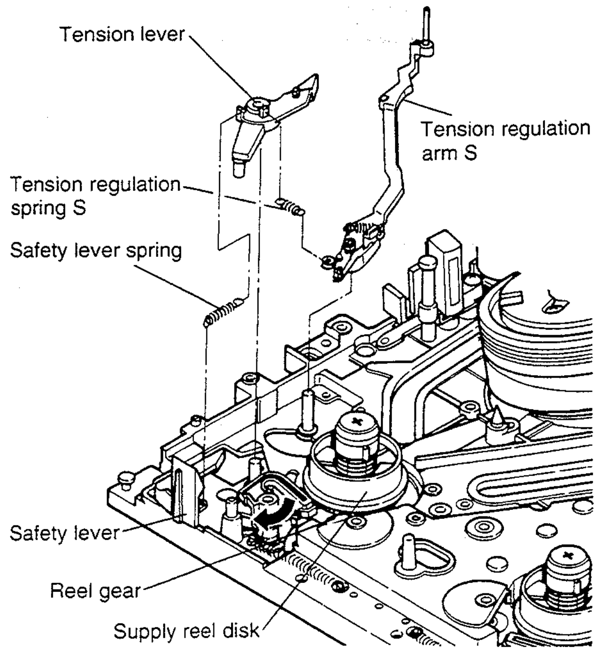

Tension lever
Tension regulation arm S
Tension regulation spring S
Safety lever spring
Safety lever
Reel gear
Supply reel disk

Fig. 2-10-4

F. Assemble the tension arm to the shaft and secure the arm with the grip ring ⓑ.(Refer to Fig. 2-10-5.)

G. Fasten the tension spring to the tension arm and the tension lever.(Refer to Fig. 2-10-5.)

H. Assemble the T band holder to the main plate with care not to score or dirty the tension brake belt, and secure the holder with the screw ⓐ lightly.(Refer to Fig. 2-10-5.)

Note:

In the assembly of the T band holder, make certain that the hook of the holder positively engages with the reverse side of the main plate.

If the hook is difficult to engage with the main plate, push the hook lightly with a small screw driver etc.(Refer to Fig. 2-10-2.)

I. Separate the main brake S and the tension regulation arm S from the supply reel disk and make certain that the disk turns freely.(Refer to Fig. 2-10-3.)

J. Place the reel disk height adjusting jig(Part Number 859C342020) in the reference position on the main plate.(Refer to Fig. 2-10-6.)

K. Slowly turn the jig about point A and make sure that the height of the supply reel disk flange agrees with the point B on the supply disk adjusting side of the jig (marked SP).(Refer to Fig. 2-10-7.)

L. If the height of the disk is not satisfactory, hold the disk so that it does not turn, and turn the height adjusting screw at the top of the disk to adjust the height. (Refer to Fig. 2-11-3.)

   A) Turn the screw clockwise if the measured height is low.

   B) Turn the screw counterclockwise if the measured height is high.

M. On completion of adjustment, lock the height adjusting screw by burning it with the tip of a hot iron.

N. Install the cassette housing as in Para. 2-1-2.

O. Adjust back tension and tension pole position as outlined in Para. 3-1.

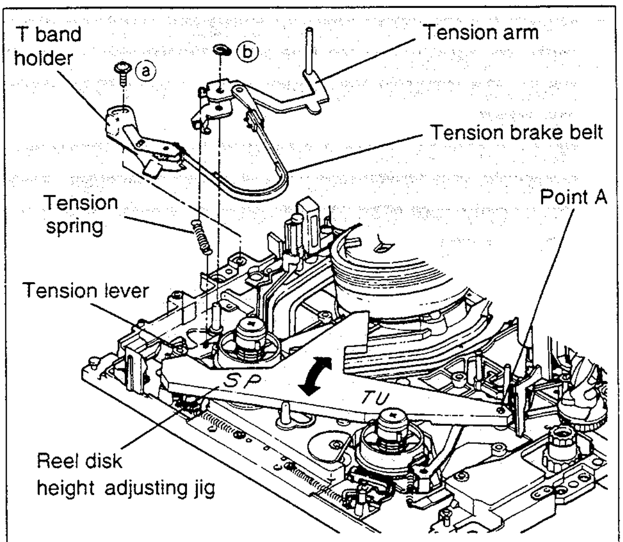

T band holder
ⓐ
ⓑ
Tension arm
Tension brake belt
Point A
Tension spring
Tension lever
SP
TU
Reel disk height adjusting jig

Fig. 2-10-5

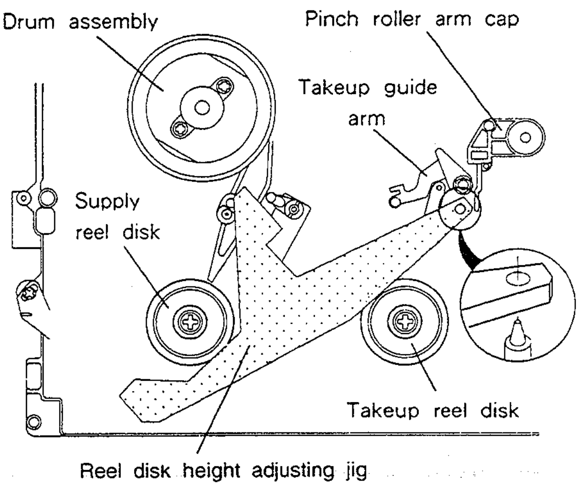

Drum assembly
Pinch roller arm cap
Takeup guide arm
Supply reel disk
Takeup reel disk
Reel disk height adjusting jig

Fig. 2-10-6

FOD025

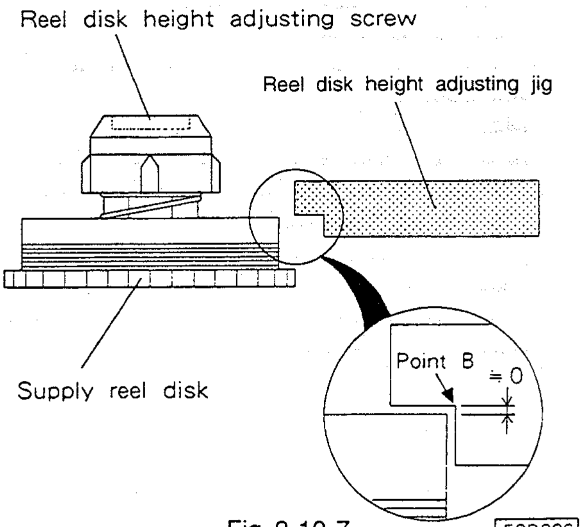

Reel disk height adjusting screw
Reel disk height adjusting jig
Supply reel disk
Point B
≒0

Fig. 2-10-7

FOD026

2-11 Takeup Reel Disk

2-11-1 Removal(Refer to Fig. 2-11-1.)

A. Remove the cassette housing as in Para. 2-1-1.

B. Detach the spring RS and the tension regulation spring T from the tension regulation arm T and the lever RS.

C. Remove the cut washer which fastens the tension regulation arm T.

D. Turn the takeup guide arm slightly clockwise and raise the tension regulation arm T to remove it from the shaft.

E. Turn the main brake slightly counter-clockwise to separate the brake from the takeup reel disk and raise the disk upwards to remove it from the shaft.

2-11-2 Installation(Refer to Fig. 2-11-2, 2-11-3.)

A. Turn the main brake T slightly counter-clockwise to release the takeup reel disk shaft. Slip the takeup reel disk onto the shaft so that the gear of the takeup reel shall mesh with the reel gear.(Refer to Fig. 2-11-2.)

B. Turn the takeup guide arm slightly clockwise and install the tension regulation arm T to the shaft. Secure the arm with a cut washer.

C. Fasten the tension regulation spring T and the spring RS to the tension regulation arm T and the lever RS.

D. Separate the main brake T and the tension regulation arm T from the takeup reel disk and make certain that the takeup reel disk turns freely.

E. Place the reel disk height adjusting jig(Part Number 859C342020) in the reference position on the main plate. (Refer to Fig. 2-10-6.)

F. Turn the jig slowly about the point A towards the takeup reel disk to make certain that the height of the disk flange agrees with the point B on the takeup side of the jig(marked TU). (Refer to Fig. 2-11-3.)

G. If the height of the disk is not satisfactory, hold the disk so that it shall not turn, and turn the height adjusting screw at the top of the disk to adjust the height. (Refer to Fig. 2-11-3.)

   A) Turn the screw clockwise if the measured height is low.

   B) Turn the screw counterclockwise if the measured height is high.

H. On completion of height adjustment, lock the adjusting screw by burning it with the tip of a hot iron.

I. Install the cassette housing as in Para. 2-1-2.

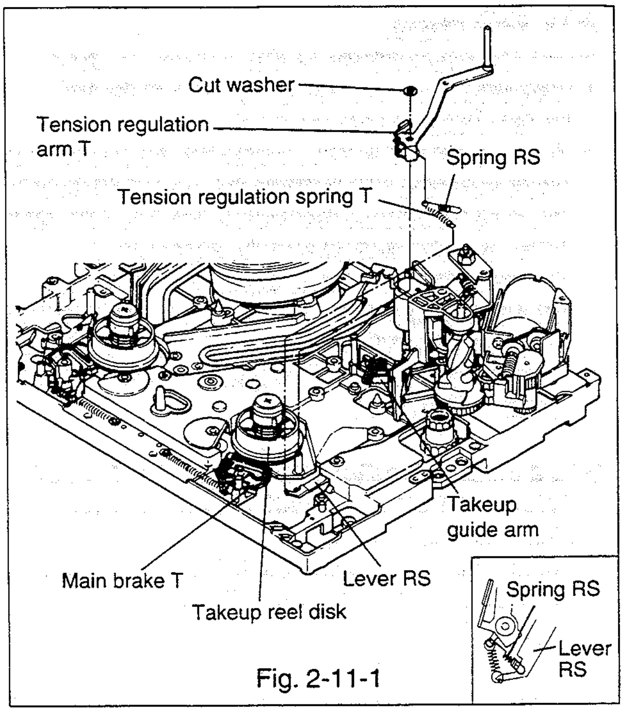

Cut washer
Tension regulation arm T
Spring RS
Tension regulation spring T
Takeup guide arm
Main brake T
Lever RS
Takeup reel disk
Spring RS
Lever RS

Fig. 2-11-1

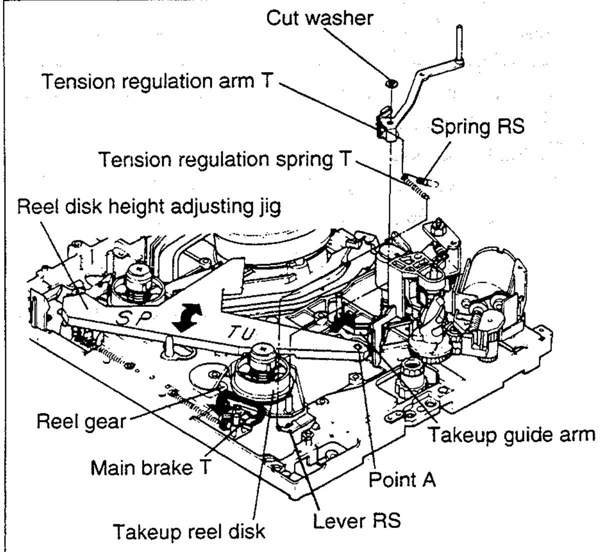

Cut washer
Tension regulation arm T
Spring RS
Tension regulation spring T
Reel disk height adjusting jig
SP
TU
Reel gear
Takeup guide arm
Main brake T
Point A
Takeup reel disk
Lever RS

Fig. 2-11-2

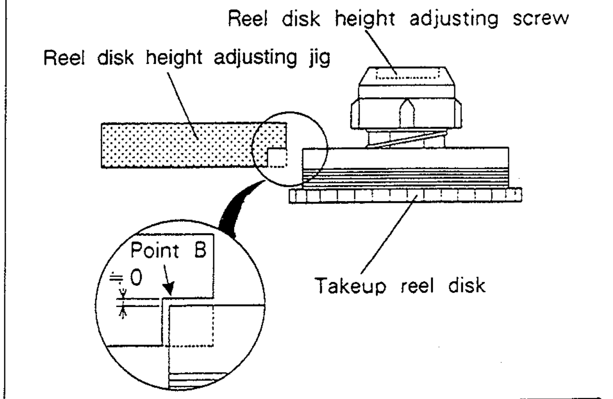

Reel disk height adjusting screw
Reel disk height adjusting jig
Point B
≒0
Takeup reel disk

Fig. 2-11-3

F0D029

2-12 A/C Head

2-12-1 Removal (Refer to Fig. 2-12-1, 2-12-2.)

A. Disconnect the connector from the PCB-A/C HEAD.(Refer to Fig. 2-12-1.)
B. Remove the nut which fastens the A/C head assembly.
C. Raise upwards and remove the A/C head assembly from the shaft by paying attention to the A/C arm spring which turns the A/C head assembly clockwise.
D. Remove three A/C head fastening screws(ⓐ ~ ⓒ) and the A/C spring shown in Fig. 2-12-2, and remove the A/C head from the A/C arm.
E. Unsolder the PCB-A/C HEAD from the A/C head.(Refer to Fig. 2-12-2.)

2-12-2 Installation(Refer to Fig. 2-12-1~2-12-3.)

A. Solder the PCB A/C HEAD to the A/C head. (Refer to Fig. 2-12-2.)
B. Fasten the A/C head to the A/C arm with three screws(ⓐ ~ ⓒ) and the A/C spring.
Note:
Install the A/C head to the A/C arm so that the base surface of the A/C head shall be parallel to the A/C arm, and their spacing and the A/C head installation screwⓒ height shall be as specified in Fig. 2-12-3.
C. Assemble the A/C head assembly to the shaft while turning the A/C arm spring counter-clockwise about 60° (Refer to Fig. 2-12-1.)
D. Tighten the A/C head assembly fastening nut so that the base surface of the A/C head shall be about 7mm above the main plate surface.(Refer to Fig. 2-12-3.)
E. Plug in the connector to the PCB-A/C HEAD. (Refer to Fig. 2-12-1.)
F. Conduct the A/C head adjustment and the phase adjustment as outlined in Para. 3-3 and 3-4.

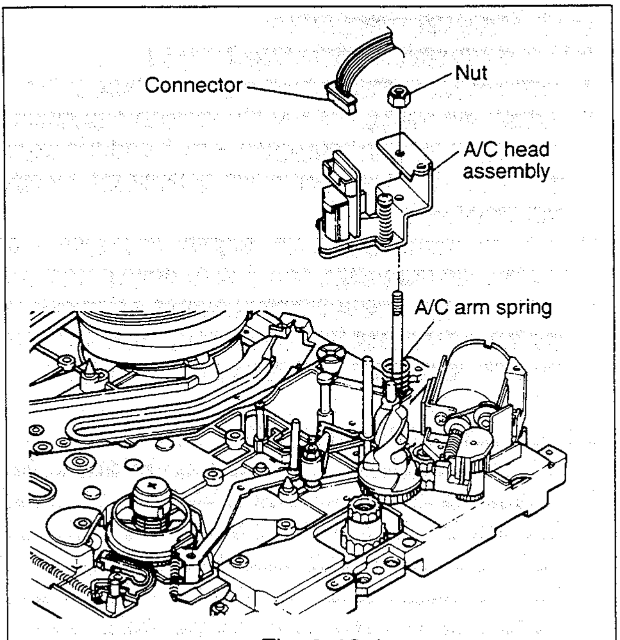

Connector
Nut
A/C head assembly
A/C arm spring

Fig. 2-12-1

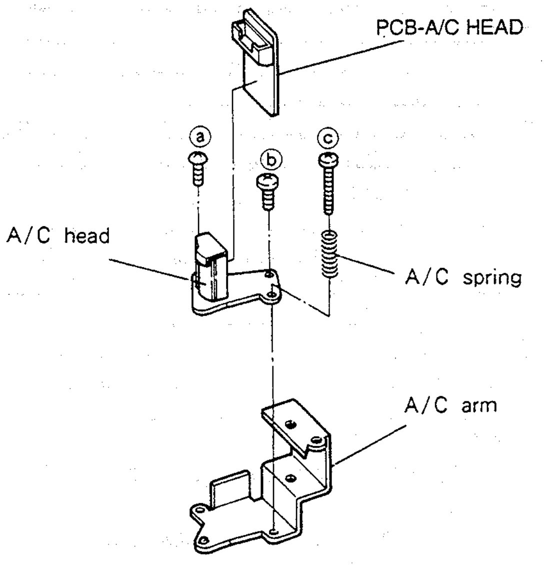

PCB-A/C HEAD
ⓐ
ⓑ
ⓒ
A/C head
A/C spring
A/C arm

Fig. 2-12-2 F0D031

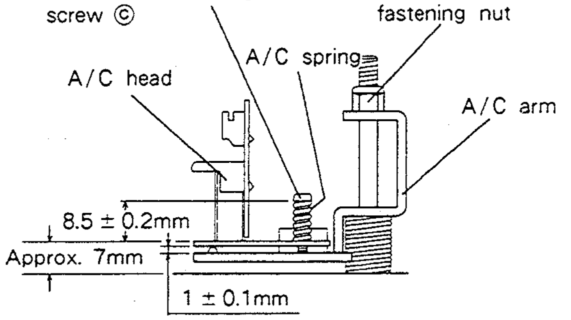

A/C head fastening screw ⓒ
A/C head assembly fastening nut
A/C spring
A/C head
A/C arm
8.5 ± 0.2mm
Approx. 7mm
1 ± 0.1mm

Fig. 2-12-3 F0D032

2-13 Take Up Guide Arm

2-13-1 Removal(Refer to Fig. 2-13-1.)

A. Set the VCR in the eject mode.
B. Remove the pinch roller arm assembly.
(Refer to Para. 2-8 " Pinch Roller ")
C. Raise and separate the pinch roller cam and the TU-G gear arm from the shaft at the same time.
D. Remove the takeup guide arm fastening nut. Raise and separate the takeup guide arm from the shaft with care not to lose the TU-G spring.

2-13-2 Installation(Refer to Fig. 2-13-1~2-13-3.)

A. Install the TU-G spring and the takeup guide arm so that one end of the TU-G spring is fastened to the takeup guide arm and the other end is fastened to the hook of the main plate. Secure them with the fastening nut temporarily.
B. Place the reel disk height adjusting jig(for the F deck) in the reference position on the main plate(Refer to Fig. 2-10-6). Insure the takeup guide arm is level with point B of the height adjusting jig(for the E deck). (Refer to Fig. 2-13-2.)
C. Turn the takeup tension lever fully clockwise as shown in Fig. 2-13-1.
D. Line the matching mark on the TU-G gear arm and beginning of gear section on the takeup guide arm, and line the matching mark on the pinch roller cam and center of gear on the joint gear as shown in Fig. 2-13-3, and install the pinch roller cam and the TU-G gear to the shaft at the same time.
E. Assemble the pinch roller arm assembly to the shaft on the main plate.(Refer to Fig. 2-13-1.)
F. Secure the pinch roller arm assembly with the pinch roller arm cap and the grip ring.

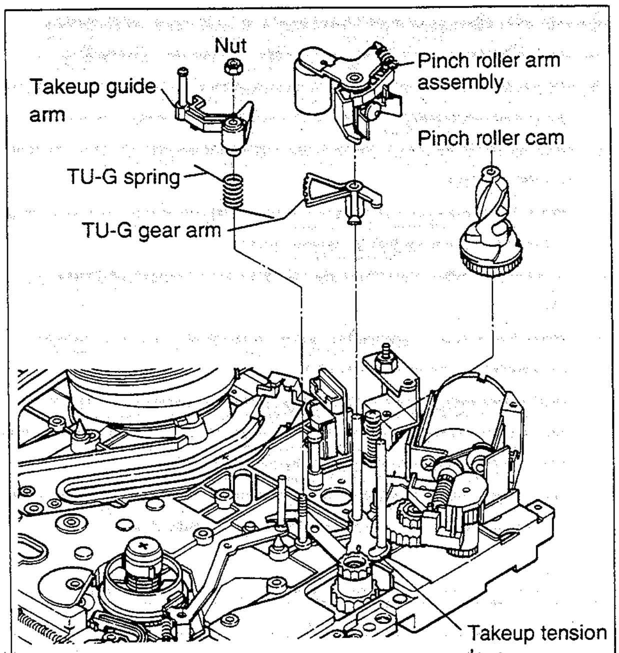

Nut
Takeup guide arm
Pinch roller arm assembly
Pinch roller cam
TU-G spring
TU-G gear arm
Takeup tension lever

Fig. 2-13-1

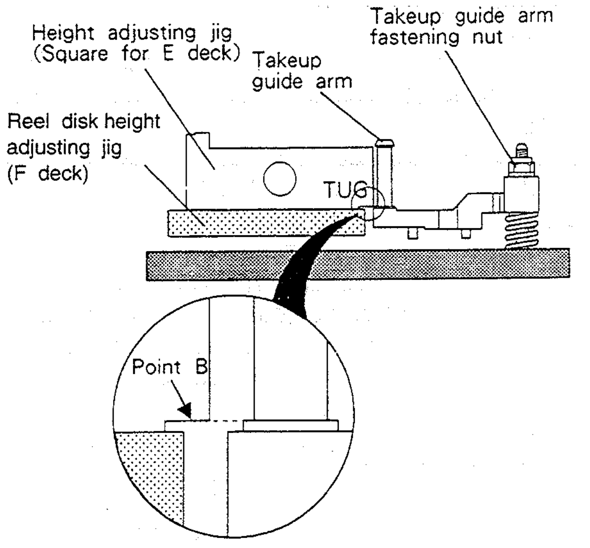

Height adjusting jig (Square for E deck)
Takeup guide arm
Takeup guide arm fastening nut
Reel disk height adjusting jig (F deck)
TUG
Point B

Fig. 2-13-2

F0D034

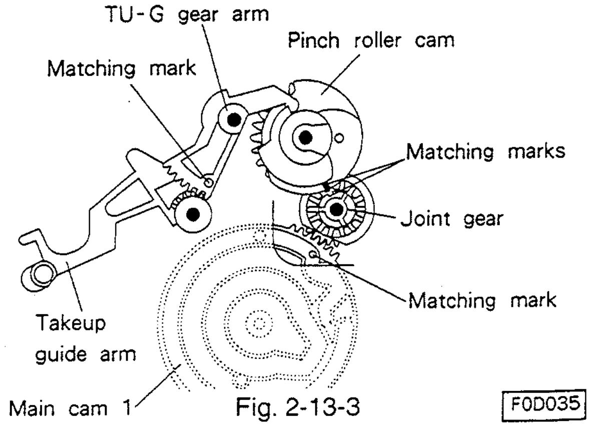

TU-G gear arm
Pinch roller cam
Matching mark
Matching marks
Joint gear
Matching mark
Takeup guide arm
Main cam 1

Fig. 2-13-3

F0D035

2-14 PCB-Deck(Printed Circuit Board)

2-14-1 Removal(Refer to Fig. 2-14-1, 2-14-2.)

A. Detach the capstan brake spring from the capstan brake and the loading gear arm.(Refer to Fig. 2-14-1.)

B. Remove the reel belt from the bottom of the deck.(Refer to Fig. 2-5.)

C. Detach two grip rings ⓕ shown in Fig. 2-14-2 and remove the loading gear arm.

D. Unsolder the terminals of the FE head.(Refer to Fig. 2-14-1.)

E. Unfasten the catches and remove the F/L gear 2, 3 and 4.(Refer to Fig. 2-14-2.)

F. Remove grip ring ⓖ and cut washer ⓗ, and unfasten three catches shown in Fig. 2-14-3 to remove the cam plate B.(Refer to Fig. 2-14-2.)

G. Unscrew five fastening screws(ⓐ ~ ⓔ)and remove the PCB-DECK.(Refer to Fig. 2-14-2.)

2-14-2 Installation(Refer to Fig. 2-14-1~2-14-3.)

A. Make certain that the mode switch is set to the eject position.(Refer to section 2-9.) Fasten the PCB DECK with five screws and solder the FE head terminals. (Refer to Fig. 2-14-1.)

Note:

The safety lever is normally held leftward with a spring. Pull the safety lever forwards and install the PCB DECK.

B. Install the cam plate B by paying attention to the pin(ⓐ ~ ⓖ) positions shown in Fig. 2-14-3, and secure the plate with three catches, grip ring ⓖ and cut washer ⓗ.

C. Line the matching mark on the loading arm T and that on the loading gear arm as shown in Fig. 2-14-3, and assemble the loading gear arm so that the pin of the loading gear arm shall enters the groove of the main cam 2. Secure the loading gear arm with two grip rings ⓕ.

D. Assemble the F/L gear 2, 3, and 4 to the shafts.(Refer to Fig. 2-14-2.)

E. Install the reel belt.(Refer to Fig. 2-5.)

F. Fasten the capstan brake spring to the capstan brake and the loading gear arm from the top side of the deck.(Refer to Fig. 2-14-1.)

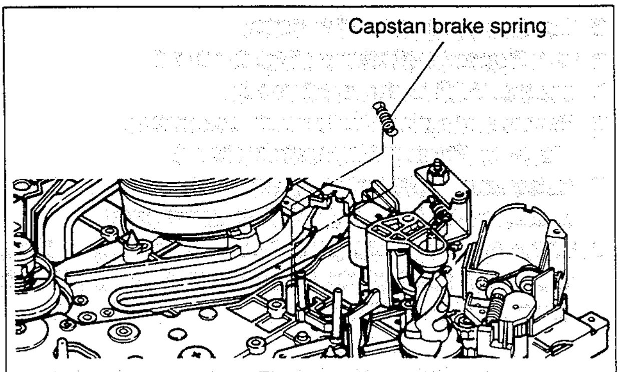

Capstan brake spring

Fig. 2-14-1

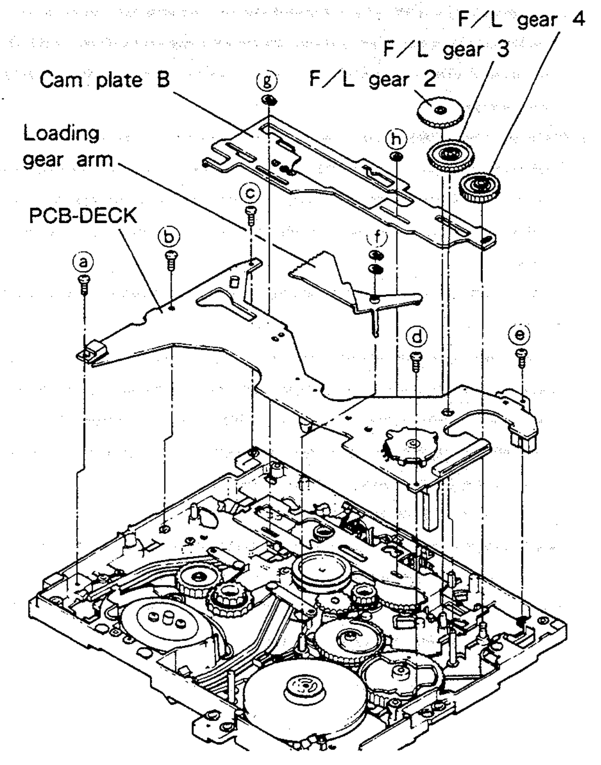

F/L gear 4
F/L gear 3
Cam plate B
ⓖ
F/L gear 2
Loading gear arm
ⓗ
ⓒ
PCB-DECK
ⓑ
ⓕ
ⓐ
ⓓ
ⓔ

Fig. 2-14-2

F0D037

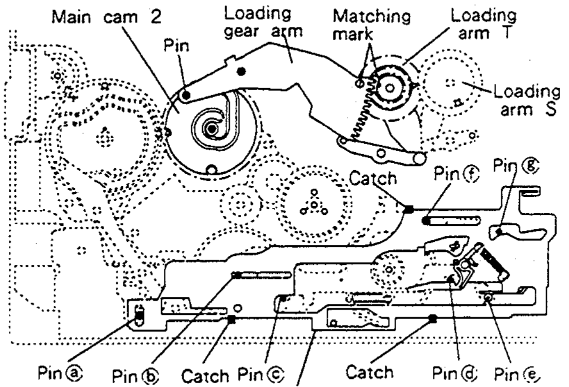

Main cam 2
Pin
Loading gear arm
Matching mark
Loading arm T
Loading arm S
Catch
Pinⓕ
Pinⓖ
Pinⓐ
Pinⓑ
Catch
Pinⓒ
Catch
Pinⓓ
Pinⓔ
Cam plate B

Fig. 2-14-3

F0D038

2-15 Positioning and Installation Sequence of Parts Around Main Cam 1 (Bottom Side of Deck) (Refer to Fig. 2-15-1~2-15-6.)

Note:
Set the VCR to the eject mode to install the main cam 1 and its peripheral parts.

A. Line the positioning hole in lever RS to that of the main plate, and assemble lever RS to the shaft.(Refer to Fig. 2-15-1.)

B. Line the positioning hole in lever C with that of the main plate, and assemble lever C to the shaft.

C. Take care not to move the lever RS and lever C, assemble the main cam 1 to the shaft by lining the matching mark of the joint gear with the positioning hole of main plate. Secure the main cam 1 with the grip ring.(Refer to Fig. 2-15-2.)

Note:
The pins of the lever RS and the lever C enter the groove of the main cam 1 when the levers are lined with the positioning holes.
Make certain that the pins of the levers enter the groove of the main cam 1.

D. Assemble the thrust washer to the pin ⓒ shown in Fig. 2-15-2, and install the cam plate C so that the corresponding positions of the plate match the pins(ⓐ ~ ⓖ).

E. Fasten cam spring C to cam plate C and the cam plate holder.(Refer to Fig. 2-15-2.)

F. Assemble lever B to the shaft so that the pin of the lever shown in Fig. 2-15-3 enters the groove of the main cam 1. Secure the lever with a grip ring.

G. Line the positioning hole of the F/L idler lever with that of the main plate.(Refer to Fig. 2-15-3.)

Note:
The pin of the F/L idler lever enters the groove of the main cam 2 when the positioning hole of the F/L idler lever is aligned.
Make certain that the pin of the lever enters the groove of the main cam 2.

H. Line the matching mark of main cam 2 with that of main cam 1, and also the positioning hole of main cam 2, and assemble the main cam 2 to the shaft. (Refer to Fig. 2-15-3.)

Note:
Make certain that the pin of the F/L idler lever correctly enters in the groove of the main cam 2.

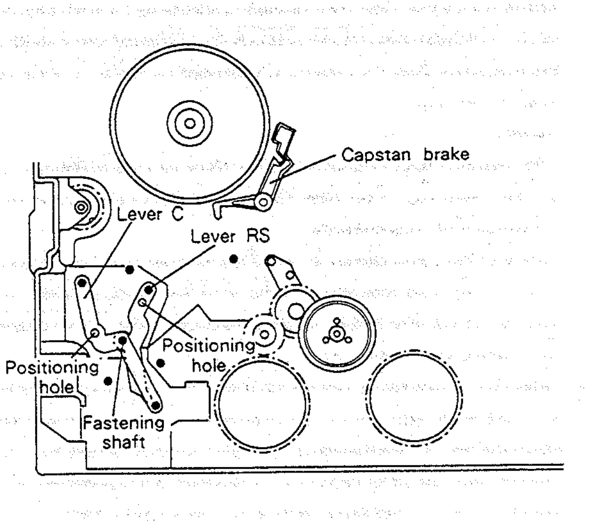

Capstan brake
Lever C
Lever RS
Positioning hole
Positioning hole
Fastening shaft

Fig. 2-15-1 F0D039

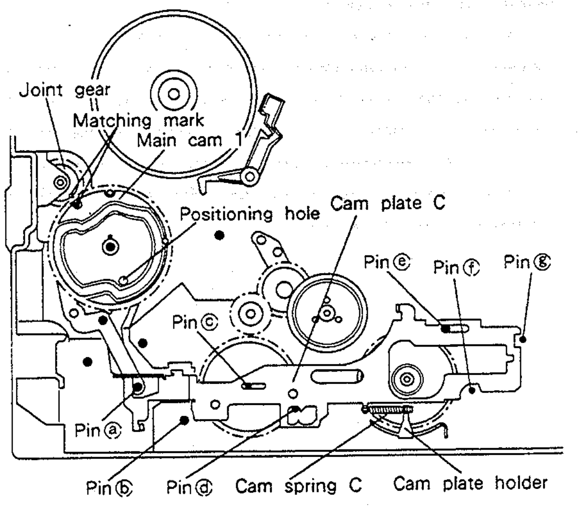

Joint gear
=
Matching mark
Main cam 1
Positioning hole
Cam plate C
Pin ⓔ
Pin ⓕ
Pin ⓖ
Pin ⓒ
Pin ⓐ
Pin ⓑ
Pin ⓓ
Cam spring C
Cam plate holder

Fig. 2-15-2 F0D040

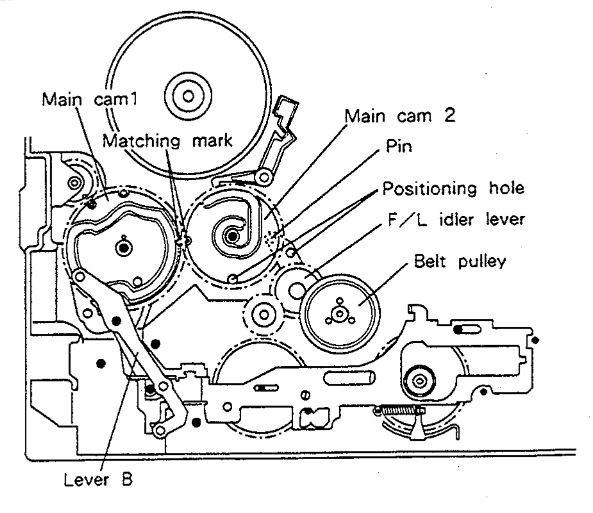

Main cam1
Matching mark
Main cam 2
Pin
Positioning hole
F/L idler lever
Belt pulley
Lever B

Fig. 2-15-3 F0D041

I. Make certain that the mode switch is in the eject position. Fasten the PCB-DECK assembly with five screws and solder the FE head terminals.(Refer to Fig. 2-14-2 and 2-14-1.)
Note:
The safety lever is normally held in the leftward position by the spring. Pull the lever forwards and install the PCB DECK assembly.

J. Install the cam plate B so that the plate matches pins (ⓐ ~ ⓖ) as shown in Fig. 2-15-4, especially pin ⓔ, and secure the plate with three clamps, cut washer (pin ⓑ) and grip ring (pin ⓕ).

K. Line the matching mark of the loading arm T with that of the loading gear arm as shown in Fig. 2-15-4, and assemble the loading gear arm to the shaft so that the pin of the loading gear arm enters the groove of the main cam 2. Secure arm with two grip rings ⓕ. (Refer to Fig. 2-15-5.)

L. Assemble the F/L gear 2, 3, and 4 to the shafts as shown in Fig. 2-15-5.

M. Install the reel belt. (Refer to Fig. 2-5.)

N. Fasten the tension regulation spring T and the spring RS to the tension regulation arm T and the lever RS from the top side of the deck. (Refer to Fig. 2-11-1.)

O. Fasten the capstan brake spring to the capstan brake and the loading gear arm from the top side of the deck. (Refer to Fig. 2-15-6.)

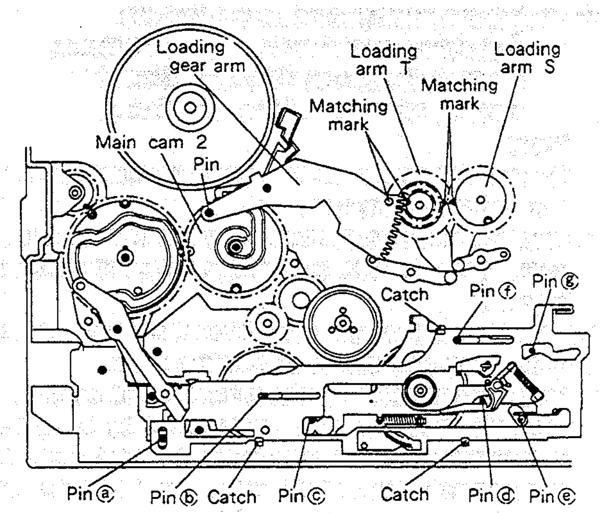

Loading gear arm
Loading arm T
Loading arm S
Matching mark
Matching mark
Main cam 2
Pin
Catch
Pinⓕ
Pinⓖ
Pinⓐ
Pinⓑ
Catch
Pinⓒ
Catch
Pinⓓ
Pinⓔ

Fig. 2-15-4

F0D042

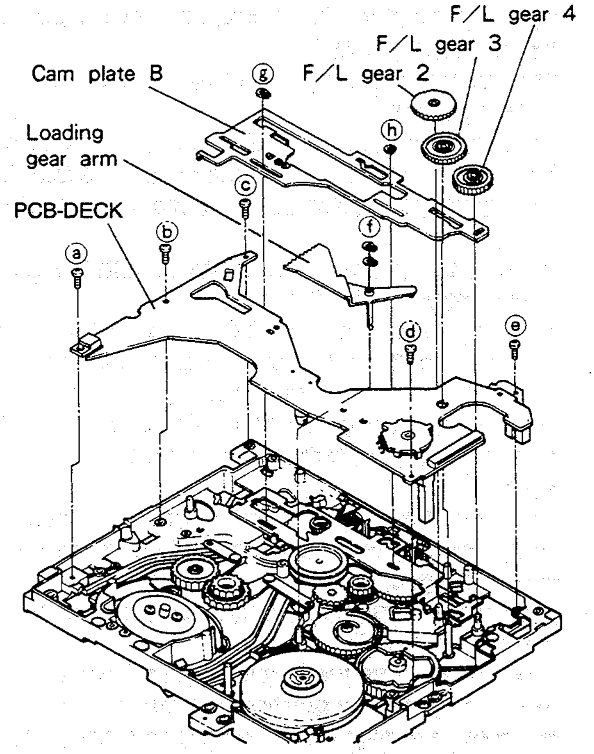

F/L gear 4
F/L gear 3
Cam plate B
ⓖ
F/L gear 2
ⓗ
Loading gear arm
ⓒ
PCB-DECK
ⓑ
ⓐ
ⓕ
ⓓ
ⓔ

Fig. 2-15-5

F0D037

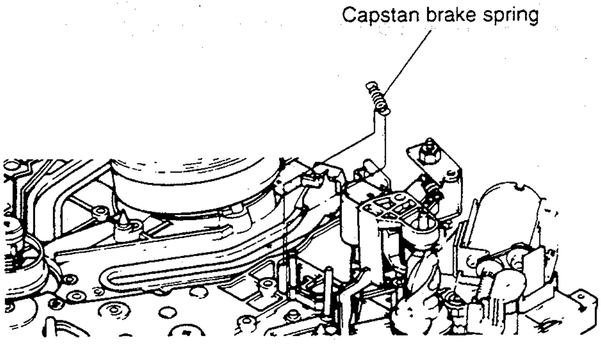

Capstan brake spring

Fig. 2-15-6

2-16 Supply and Takeup Guide Rollers

2-16-1 Removal(Refer to Fig. 2-16.)

A. Remove the cassette housing as in Para. 2-1-1.
B. Loosen the set screw so the guide roller turns freely.
C. Loosen the guide roller height adjusting screw located at the top of the guide roller by turning counterclockwise with the height adjusting screwdriver. Raise and remove the roller from the tape guide.

2-16-2 Installation(Refer to Fig. 2-16.)

A. Make certain that the fastening thread section of a new guide roller is provided with a rubber ring.
B. Set the new guide roller in the tape guide fastening hole.
C. Turn the guide roller slowly clockwise till it becomes heavy.
D. Turn further about 1/6 turn from the point where the guide roller becomes heavy, and return the roller about one turn counter-clockwise.
E. Again turn the guide roller slowly clockwise till it becomes heavy. Turn the roller further about 1/6 turn from the point where the roller becomes heavy.
F. Secure the guide roller lightly with the set screw. Check and adjust the envelope as in Para. 3-2.

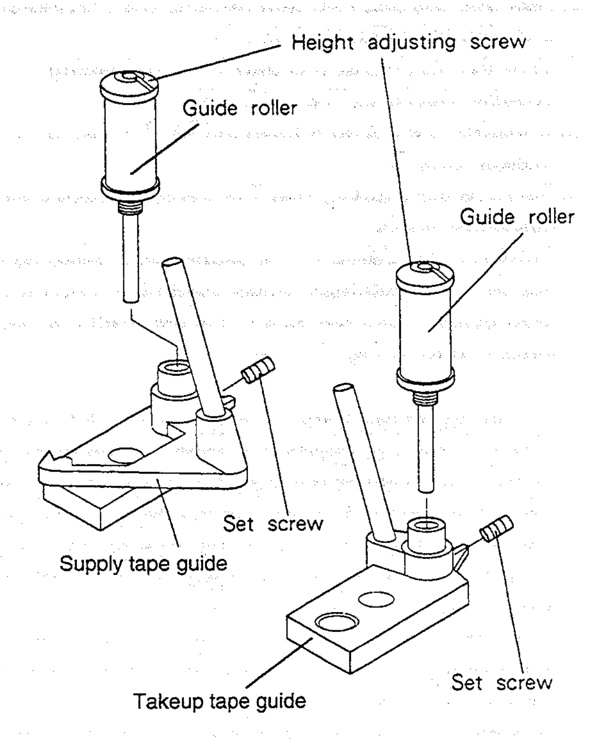

Height adjusting screw
Guide roller
Guide roller
Set screw
Supply tape guide
Set screw
Takeup tape guide
F0D043

Fig. 2-16

2-17 Supply and Takeup Tape Guide Assemblies

Note:
Refer to section 3-2-7 and 3-3-3 before replacing the supply or takeup tape guide assemblies.

2-17-1 Removal(Refer to Fig. 2-17-1~2-17-4.)

A. Remove the cassette housing as in Para. 2-1-1.
B. Detach the capstan brake spring from the capstan brake and the loading gear arm.(Refer to Fig. 2-15-6.)
C. Remove the reel belt. (Refer to Fig. 2-5.)
D. Secure the tension arm and the tension regulation arm S with a rubber band etc. so as to separate them from the supply guide roller.(Refer to Fig. 2-17-1.)

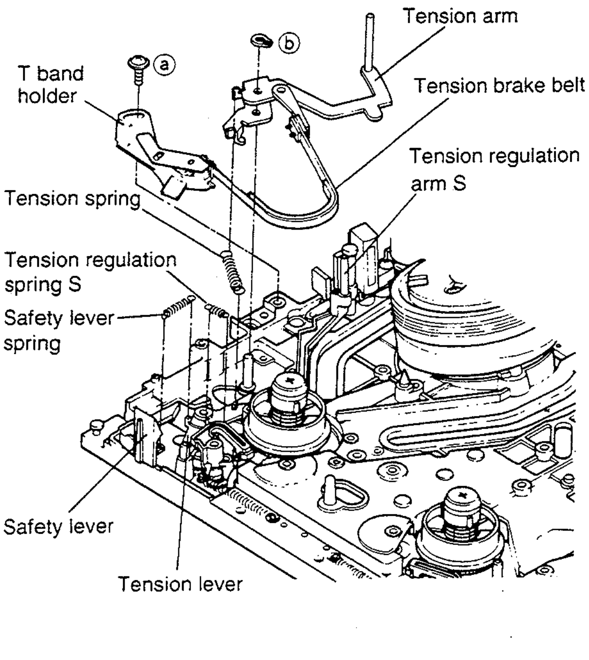

Tension arm
ⓑ
ⓐ
T band holder
Tension brake belt
Tension regulation arm S
Tension spring
Tension regulation spring S
Safety lever spring
Safety lever
Tension lever

Fig. 2-17-1

E. Remove the grip ring and remove the loading gear arm.(Refer to Fig. 2-17-2.)

F. Turn the loading arm S and T to the loading position.(Refer to Fig. 2-17-2.)

G. Unfasten the clamp shown in Fig. 2-17-3, and remove loading arm S.

H. Remove the loading arm T is being replaced the takeup guide assembly.

I. Unfasten the clamp of the slider which secures the supply or takeup tape guide assembly, and remove the tape guide assembly and the slider from the main plate.(Refer to Fig. 2-17-4.)

2-17-2 Installation(Refer to Fig. 2-17-1~2-17-4.)

A. Place a new tape guide assembly on the installation rail of the main plate and install the slider on the reverse side of the main plate so that the catch of the slider enters the fastening hole of the tape guide assembly.

B. If the takeup tape guide is replaced, install the loading arm T first.(Refer to Fig. 2-17-2.)

C. Install the loading arm T so that the matching mark of the loading arm S is lined with the matching mark of the loading arm T as illustrated in Fig. 2-17-2.

D. Line the matching mark of the loading gear arm with that of the loading arm T, and assemble the loading gear arm to the shaft so that the pin of the loading gear arm enters the groove of the main cam 2. Secure the loading gear arm with two grip rings.

E. Install the reel belt.(Refer to Fig. 2-5.)

F. Fasten the capstan brake spring to the capstan brake and the loading gear arm from the top side of the deck.(Refer to Fig. 2-17-1.)

G. Install the cassette housing as in Para. 2-1-2.

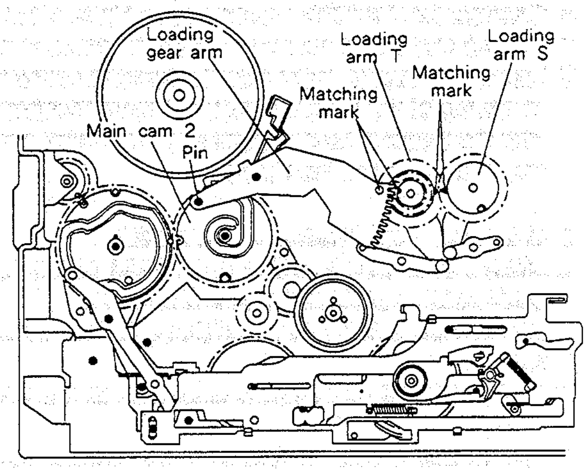

Loading gear arm
Loading arm T
Loading arm S
Matching mark
Matching mark
Main cam 2
Pin

Fig. 2-17-2 F0D044

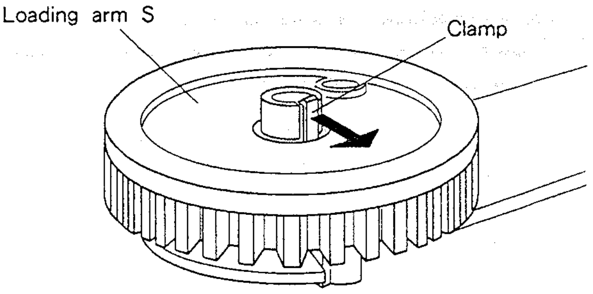

Loading arm S
Clamp

Fig. 2-17-3 F0D045

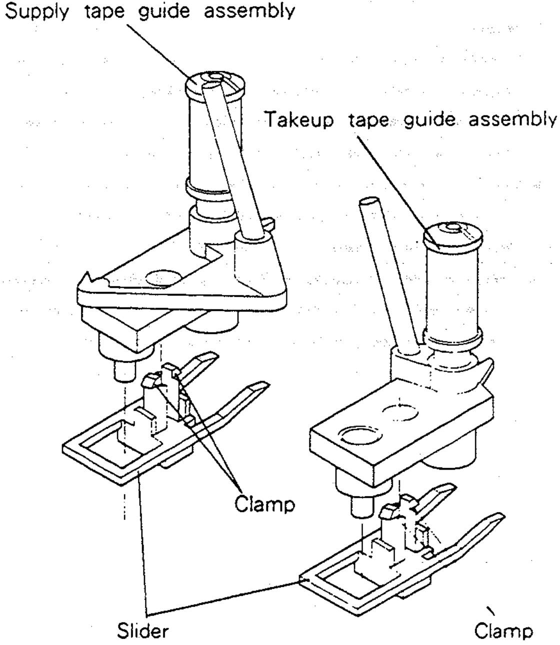

Supply tape guide assembly
Takeup tape guide assembly
Clamp
Slider
Clamp

Fig. 2-17-4 F0D046

3. Interchangeability Adjustment of Mechanism

Note:

Tracking may need to be preset in the inter-changeability adjustment of the mechanism.
Digital tracking should be preset. To preset,short circuit TP5A and TP5B on the PCB-MAIN

Note:

The adjustment is conducted in the playback mode, using the stair step signal of the alignment tape, connect an oscilloscope to TP2A and external Trig. to TP2H, unless other-wise specified.

3-1 Adjustment of Back Tension and Tension Pole Position(Refer to Fig. 3-1.)

Run a blank tape for several minutes to break in the reel disks and the transport before beginning the adjustment.

A. Set the back tension measuring jig and set the VCR to the playback mode.

B. When the running of the tape becomes steady, make certain that the tension arm check hole is within the M/P hole of the main plate(0±0.5mm)or the interval between the centre of tension pole and the centre of Supply guide pole is 2.0±0.5mm.

C. If neither the centre of Tension pole nor the tension arm check hole is in position, loosen the T band holder fastening screw lightly and move the T band holder so that the condition specified by the para.B is satisfied.

D. On completion of adjustment, tighten the T band fastening screw.

E. Make certain that the reading of the back tension measuring jig is 50±6g-cm.

F. When the running of the tape is steady, check visually to make certain that the deflection of the Tension pole is 1mm or less.

Note:

Slight fluctuation of back tension may be tolerated, however if fluctuation exceeds 5g-cm, the reel disk etc. may be defective. Examine and correct the defect.

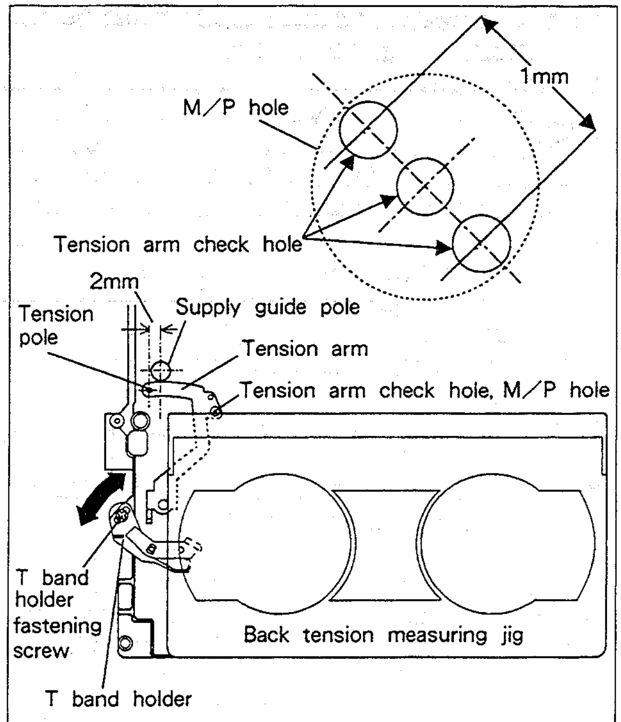

1mm
M/P hole
Tension arm check hole
2mm
Tension pole
Supply guide pole
Tension arm
Tension arm check hole, M/P hole
T band holder fastening screw
Back tension measuring jig
T band holder

Fig. 3-1

F0D047

3-2 Check and Adjustment of FM Envelope

3-2-1 Guide Roller Adjustment(Refer to Fig. 3-2-1.)

A. Set the VCR to the playback mode.
B. Preset tracking.
C. Check if the FM waveform is flat like A shown in Fig. 3-2-1.
D. Adjust the height of the supply guide roller as in 3-2-2 if the leading portion (the entry side of the drum)of the FM waveform is not flat like B or C.
Adjust the height of the takeup guide roller as in 3-2-3 if the trailing portion (the exit side of the drum)is not flat like D or E.

3-2-2 Adjustment of Supply Guide Roller Height (Refer to Fig. 3-2-1, 3-2-2.)

A. Loosen the set screw to such a degree so the supply guide roller turns lightly.(Refer to Fig. 3-2-2.)
B. The supply guide roller is low if the leading portion(the entry side of the drum) of the FM waveform is like B, and high if like C. Adjust the height of the roller by turning the adjusting screw at the top of the roller so that the FM waveform shall be flat like A.
- Turn the adjusting screw counterclockwise if the roller is low.
- Turn the adjusting screw clockwise if the roller is high.

C. Carry out the coarse adjustment of phase as in 3-2-4.

3-2-3 Adjustment of Takeup Guide Roller Height (Refer to Fig. 3-2-1, 3-2-2.)

A. Loosen the set screw to such a degree as the takeup guide roller turns lightly.(Refer to Fig. 3-2-2.)
B. The takeup guide roller is low if the trailing portion(the exit side of the drum) of the FM waveform is like D, and high if like E. Adjust the height of the roller by turning the adjusting screw at the top of the roller so that the FM waveform shall be flat like A.
- Turn the adjusting screw counterclockwise if the roller is low.
- Turn the adjusting screw clockwise if the roller is high.

C. On completion of height adjustment, adjust the azimuth and height of the A/C head as in 3-3-2.
D. Coarsely adjust the phase as in 3-2-4.

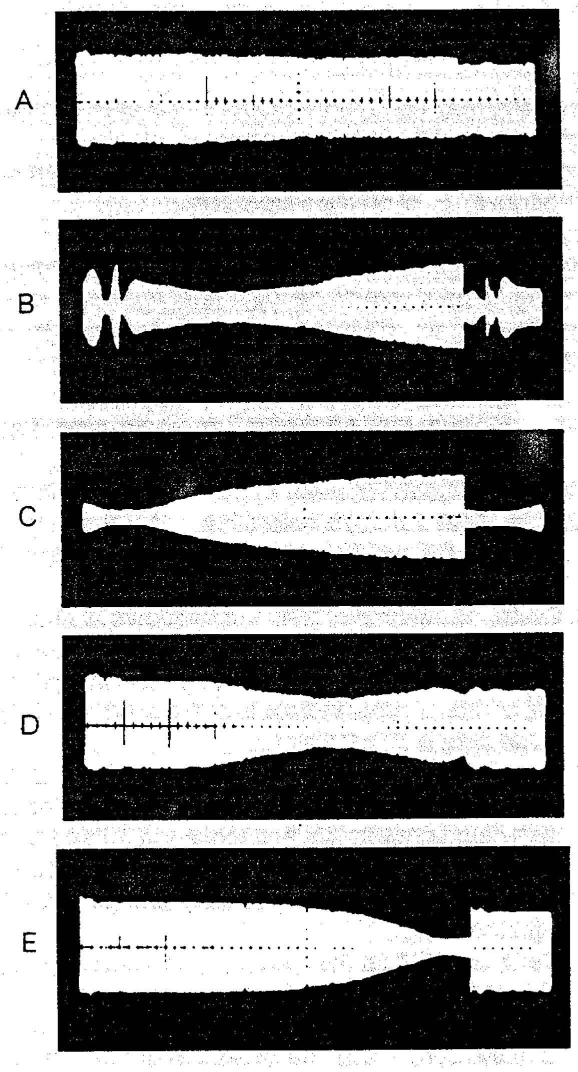


Fig. 3-2-1 F0D048~052

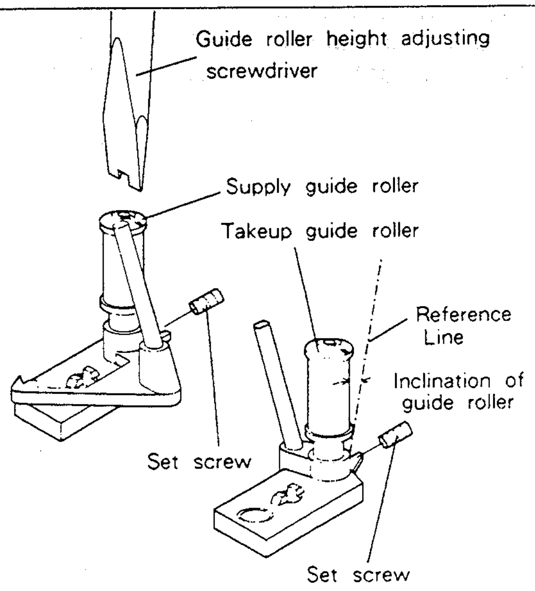


Fig. 3-2-2 F0D053

3-2-4 Coarse Phase Adjustment (Refer to Fig. 3-2-3, 3-2-4.)

A. Set the VCR to the playback mode.
B. Preset tracking.
C. Check the FM waveform after checking and adjusting the guide rollers.
D. If the amplitude of the FM waveform is narrow like F because of out of phase, adjust the phase adjusting nut so that the amplitude of the FM waveform is maximum.

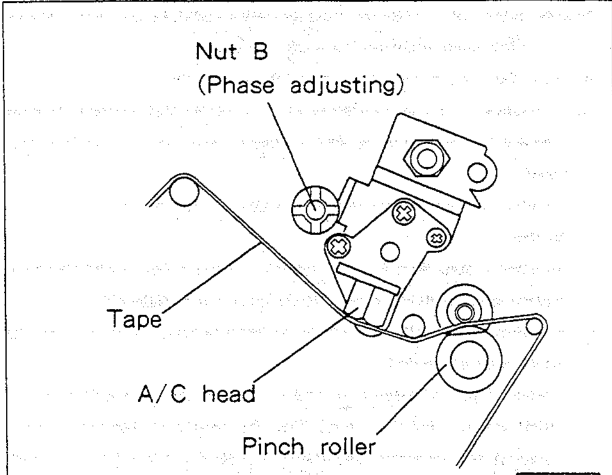


Fig. 3-2-3 FOD054

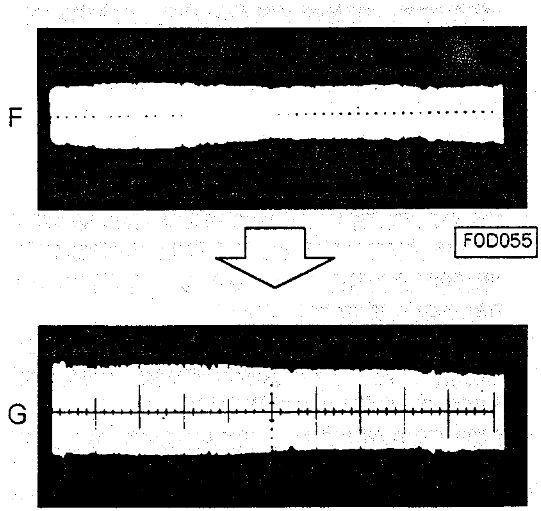
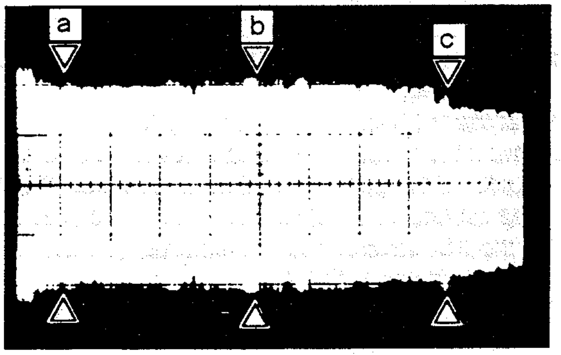


Fig. 3-2-4 FOD056

3-2-5 Check of FM Waveform Flatness (Refer to Fig. 3-2-5.)

A. Set the VCR to the playback mode.
B. Set the tracking switch to the manual mode. Vary tracking and check if the amplitude changes and the waveform remains flat.
C. Adjust tracking in the manual mode so that the amplitude is maximum, and adjust the oscilloscope so that the amplitude is '5' on the scale of the oscilloscope.
D. Adjust tracking so that the amplitude at the middle(around the point 'b')of the FM wave form is about 80%('4' on the scale of the scope)of the maximum amplitude. Make certain that the amplitudes at points 'a' and 'c' satisfy the requirements given in Fig. 3-2-5.
E. If deviating from the requirements, conduct the check and adjustment of the FM envelope beginning with 3-2.



a	c
At least 2.8 of the scale	At least 2.8 of the scale

Fig. 3-2-5 FOD057

3-2-6 Check 1:Tape Running Condition on Guide Rollers(Refer to Fig. 3-2-6.)

A. Set the VCR to the playback mode.

B. Visually check if there is a space between the tape and the lower flange of the supply and the take up guide rollers.

C. If not, replace the tape guide as in 3-2-7.

Note:

In this case the tape guide should be replaced with the tape guide which has a larger inclination.

D. If the supply tape guide is replaced, check the guide roller as in 3-2-1.

If the take up tape guide is replaced, check the guide roller as in 3-2-3, and the waveform flatness as in 3-2-5

E. Load and unload the tape several times to make certain that the flatness of the FM waveform does not change.

F. If changes occur, check the A/C arm shaft for looseness. If not free, replace the A/C arm and adjust the audio/ control head as in 3-3.

3-2-7 Replacement of Tape Guides

A. Identify the Item Number of the tape guide to be replaced. This is done by observing the marking present on the die-cast portion of the tape guide base, and comparing that marking to Fig. 3-2-7.

B. If the Item Number of the tape guide presently installed is a '2', replace the guide with an Item Number '1' guide.(Part No.635B059010)

C. If the Item Number of the present tape guide is a '1', replace the guide with an Item Number '3' guide.

D. If the Item Number of the present tape guide is a '3', replace the guide with other Item Number '3' guide.

E. Once the tape guide is replaced, resume alignment starting with 3-2-1.

3-2-8 Check 2: Tape Running Condition on Guide Rollers

A. Set the VCR to the playback mode.

B. Press the head of the supply guide roller and the take up guide roller lightly, and release the roller. Check if the FM waveform is quickly restored to the previous level.

C. If the FM waveform is not restored quickly, replace the tape guide as in 3-2-7.

D. If the supply tape guide is replaced, check the guide roller as in 3-2-1.

If the takeup tape guide is replaced, check the guide roller as in 3-2-1, and check the FM waveform as flatness as in 3-2-5

E. If satisfactory, tighten the set screw of the guide roller on the supply side and the take up side.

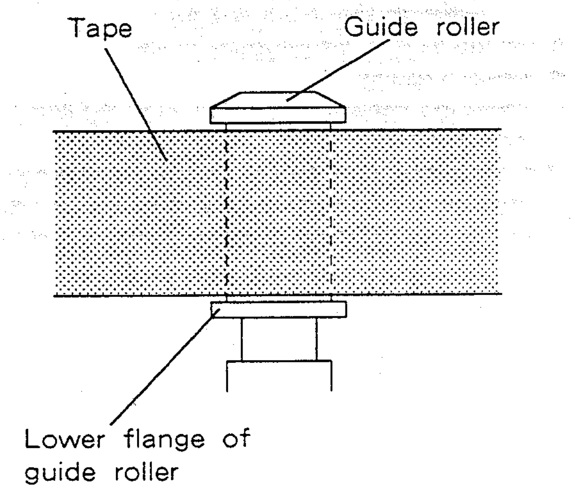
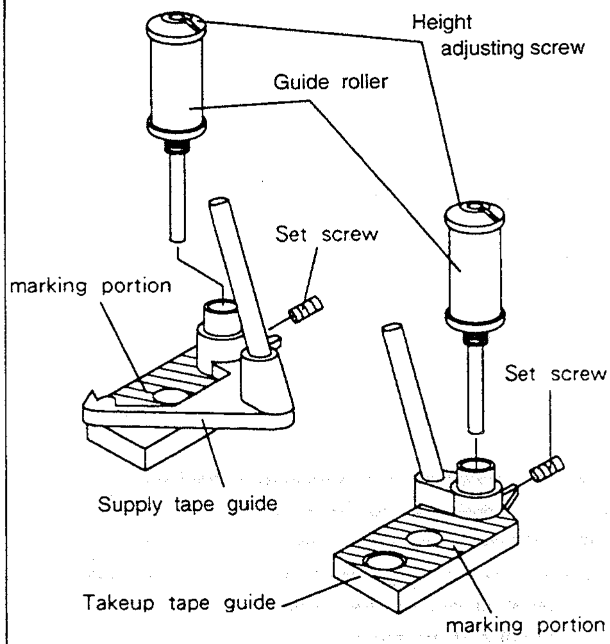


Fig. 3-2-6

FOD058



Identification of Tape Guide Item Number

(Example ; Parts No. 635B0590$\boxed{1}$0)

Item No.

Item No.1	No marking
Item No.2	Marked with black magic marker
Item No.3	Marked with red magic marker

※ The marking point is marked in the oblique line portion shown in figure above.

Fig. 3-2-7

3-3 Adjustment of Audio/Control Head

3-3-1 Adjustment of A/C Head Slant (Refer to Fig. 3-3-1.)

A. Play back a blank tape.

B. Turn the screw C slowly clockwise to crease the bottom edge of the tape slightly by the lower flange of the takeup guide pole.

C. Turn the screw C slowly counterclockwise to eliminate the crease of the bottom edge of the tape.

D. Turn the screw C slowly clockwise again and stop turning just before the tape is creased.

3-3-2 Adjustment of A/C Head Azimuth and Height(Refer to Fig. 3-3-1~3-3-3.)

A. Using stair step signal of alignment tape,connect an oscilloscope to the audio output terminal and set the VCR to the playback mode.

B. Turn the nut A(height adjusting)and the screw B(azimuth adjusting)so that the audio output level is maximum.

C. Turn the A/C head counterclockwise and release it to make certain that the audio output level does not change.

D. If the level changes, check if the A/C arm shaft is loose. If not free, replace the A/C arm and adjust the slant of the A/C head as in 3-3-1 and the azimuth and height of the A/C head from beginning.

E. Apply a force lightly to the A/C head shaft in the direction of A and A' of the arrow shown in Fig. 3-3-3, to make certain that the audio output level remains at maximum level and does not change.

F. If the level changes, turn the nut A(height adjusting)so that the audio output level is maximum. Apply a force lightly to the A/C head shaft in the direction of B and B' of the arrow shown in Fig. 3-3-3 and adjust so that the sound output level is maximum.

G. Check the sound output level in the playback mode to make sure that the fluctuation of the level is less than 2dBp-p.

H. If the fluctuation exceeds 2dBp-p, adjust the slant of the A/C head and the azimuth and height of the head.

I. If this is still not satisfactory, replace the takeup tape guide as outlined in 3-3-3.

Note:
In this case the tape guide should be replaced with a guide which has less inclination.

J. On completion of the above adjustment,adjust phase as in 3-4.

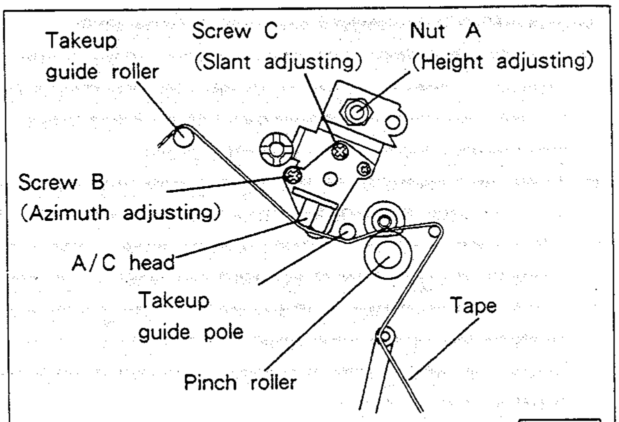


Fig. 3-3-1

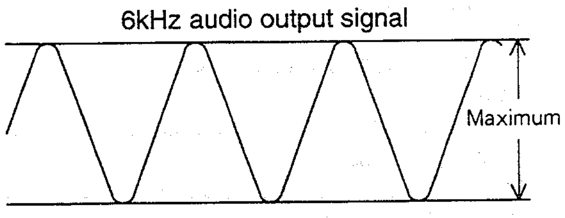


Fig. 3-3-2

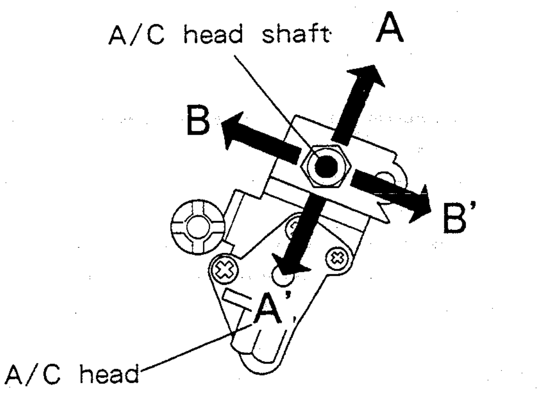


Fig. 3-3-3

Identification of Tape Guide Item Number
(Example ; Parts No. 635B060010)
Item No.

Item No.1	No marking
Item No.2	Marked with black magic marker
Item No.3	Marked with red magic marker

※The marking points are marked in the tops of the Takeup and Supply tape guides.(Refer to Fig. 3－2－7)

Fig.3-3-4

3-3-3 Replacement of Tape Guides

A. Identify the Item Number of the Tape Guide to be replaced. This is done by observing the marking present on the die-cast portion of the Tape Guide base, and comparing that marking to Fig. 3-3-4.

B. If the Item Number of the tape guide presently installed is a '3', replace the guide with an Item Number '1' guide.

C. If the Item Number of the present tape guide is a '1', replace the guide with an Item Number '2' guide.

D. If the Item Number of the present tape guide is a '2', replace the guide with other Item Number '2' guide.

E. Once the tape guide is replaced, resume alignment starting with 3-2-1.

3-4 Phase Adjustment(Refer to Fig. 3-4.)

A. Set the VCR to the playback mode.

B. Preset tracking.

C. Turn the phase adjusting nuts to make the amplitude of the FM waveform maximum.

Note:

Do not turn the phase adjusting nut more than one turn in either direction.

D. Turn the A/C head counterclockwise and return to make sure that the amplitude of the FM waveform is the same as that before turning the head.

E. If the amplitude changes, check the A/C arm shaft if loose. If not free, replace the A/C arm and adjust the A/C head as in 3-3 and the phase as in this section from beginning.

F. Load and unload the tape several times to make certain that the amplitude of the FM waveform does not change.

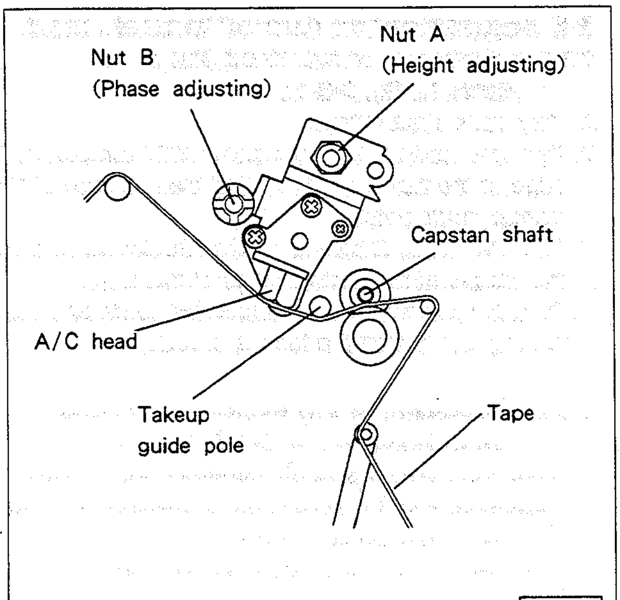


Fig. 3-4

3-5 Adjustment of Takeup Guide Arm Height (Refer to Fig. 3-5.)

A. Run a final portion of E-240 blank tape in the reverse search mode.

B. Adjust the height of the takeup guide pole by turning the height adjusting nut so that the tape shall not be creased at the upper and the lower flange portion of the take up guide pole.

Note:

Set the adjusting nut in the screwing-in direction.

Do not turn the nut more than one turn in either direction.

C. Eject the cassette tape and set to the reverse search mode again to make certain that the tape is not creased at the upper and the lower flange portion of the takeup guide pole.

D. Set to the playback mode and be sure that the tape is not creased at the upper and the lower flange portion of the takeup guide pole.

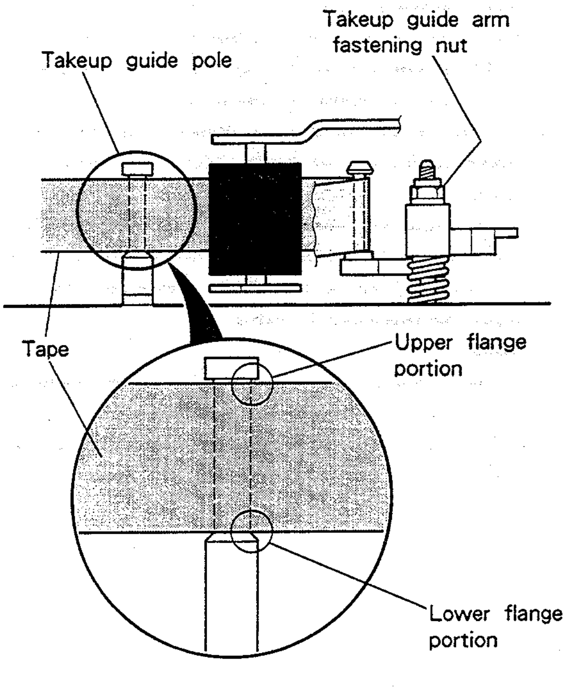


Fig. 3-5

KEY TO ABBREVIATIONS

A/C : Audio/Control
ACC : Automatic Colour Control
A.E : Audio Erase
AFC : Automatic Frequency Control
AFT-D : Automatic Fine Tuning Door Switch
AGC : Automatic Gain Control
AL : After Loading
AMP : Amplifier
ANT : Antenna
A-PB : Audio-Playback
A-REC : Audio-Recording
ALC : Automatic Level Control

BPF : Band-Pass Filter
B/W : Black and White
BS : Band Switch

CASS : Cassette
CP : Capstan
CP-FG : Capstan-Frequency Generator
CP-F/R : Capstan-Forward/Reverse
CP-M : Capstan-Motor
CONV : Converter
CTL : Control
C-LAMP : Cassette Lamp
C-I LAMP : Cassette Indicator Lamp

DAL : Delay-After Loading
DEMOD : Demodulator
DET : Detector
DL : Delay Line
DL-REV : Delay Reverse
DL-FWD : Delay Forward
DOC : Drop Out Compensator

EF : Emitter Follower
EMPHA : Emphasis
EQ : Equalizer
EE : Electronic-Electronic
ES : End Sensor

FE-H : Full Erase Head
FF : Flip Flop or Fast Forward
FG : Frequency generator
FL-SW : Front Loading Switch
FLM : Front Loading Motor
F/R-SW : FF/Rewind Switch

G : Ground

HE-1 : Hall Element-1
HE-2 : Hall Element-2
H-LED : Humidity-LED
H-SENS : Humidity-Sensor
HPF : High-Pass Filter

LIM : Limiter
LPF : Low-Pass Filter
LM : Loading Motor

MDA : Motor Drive Amplifier
MC : Mechanical Control
MIC : Microphone
MOD : Modulator

OPE : Operation
OSC : Oscillator

PB : Play Back
PG : Pulse Generator
P/R-SW : P.B/REC-Switch
PCB : Printed Circuit Board
PIC : Picture Control

REC : Recording
REF : Reference
RIS : Record Inhibit Switch
REW : Rewind
REG : Regulator
RS : Reverse Search

SENS : Sensor
SM : Supply Motor
S/P : Still/Pause
SS : Speed Search
STBY : Stand By
S & H : Sample & Hold
SYNC SEP : Sync Separator

TM : Take up Motor
T-REC : Timer-Recording
T.P : Test Point
TR : Transistor
TU-P : Tuner-Power

UL : Unloading

VS : Voltage Synthesizer
V.SYNC : Vertical Sync
VCO : Voltage Controlled Oscillator
VXO : Variable Crystal Oscillator

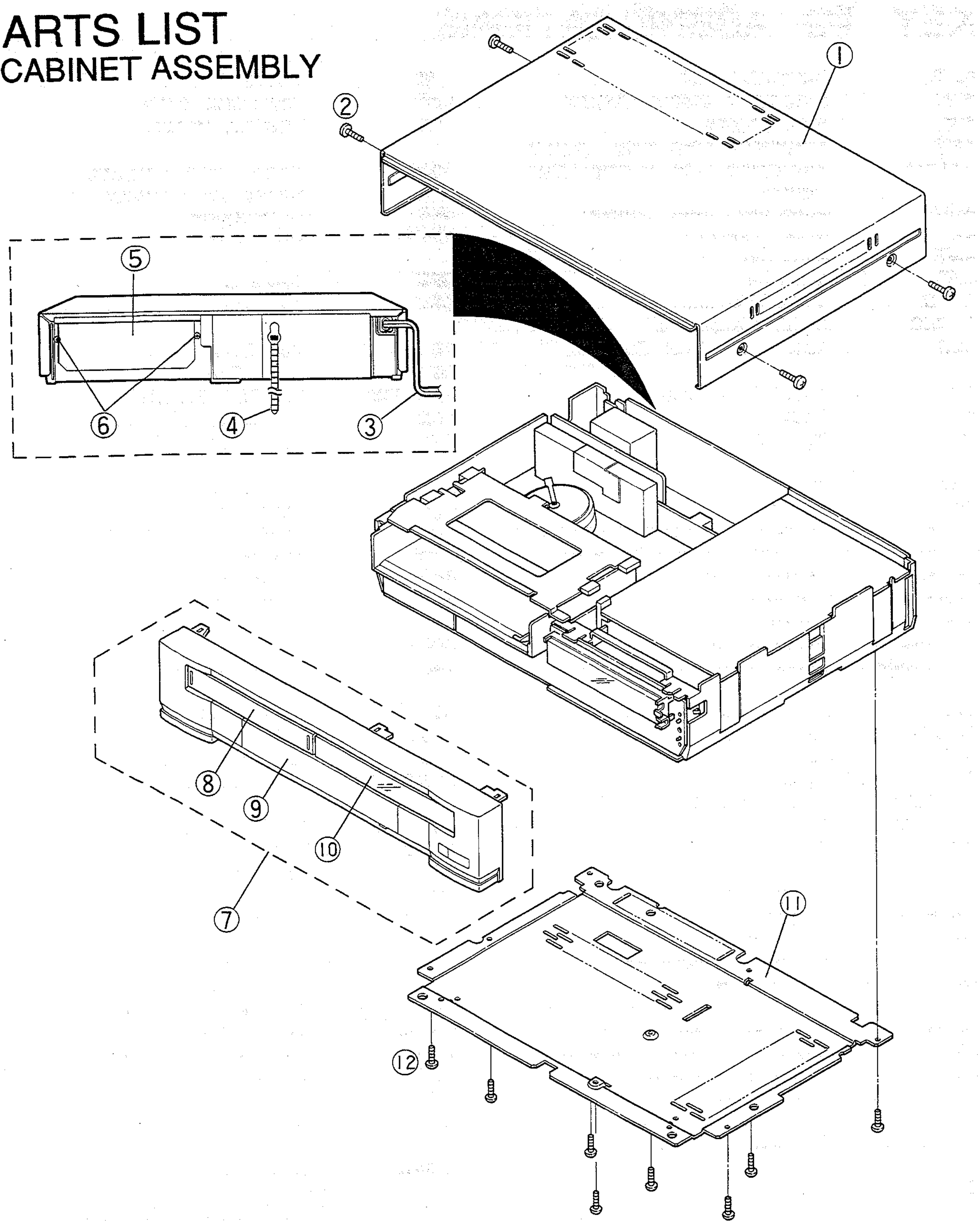
W/D : White/Dark

X'OSC : Crystal Oscillator

Y/C : Luminance/Chrominance

PARTS LIST

1.CABINET ASSEMBLY



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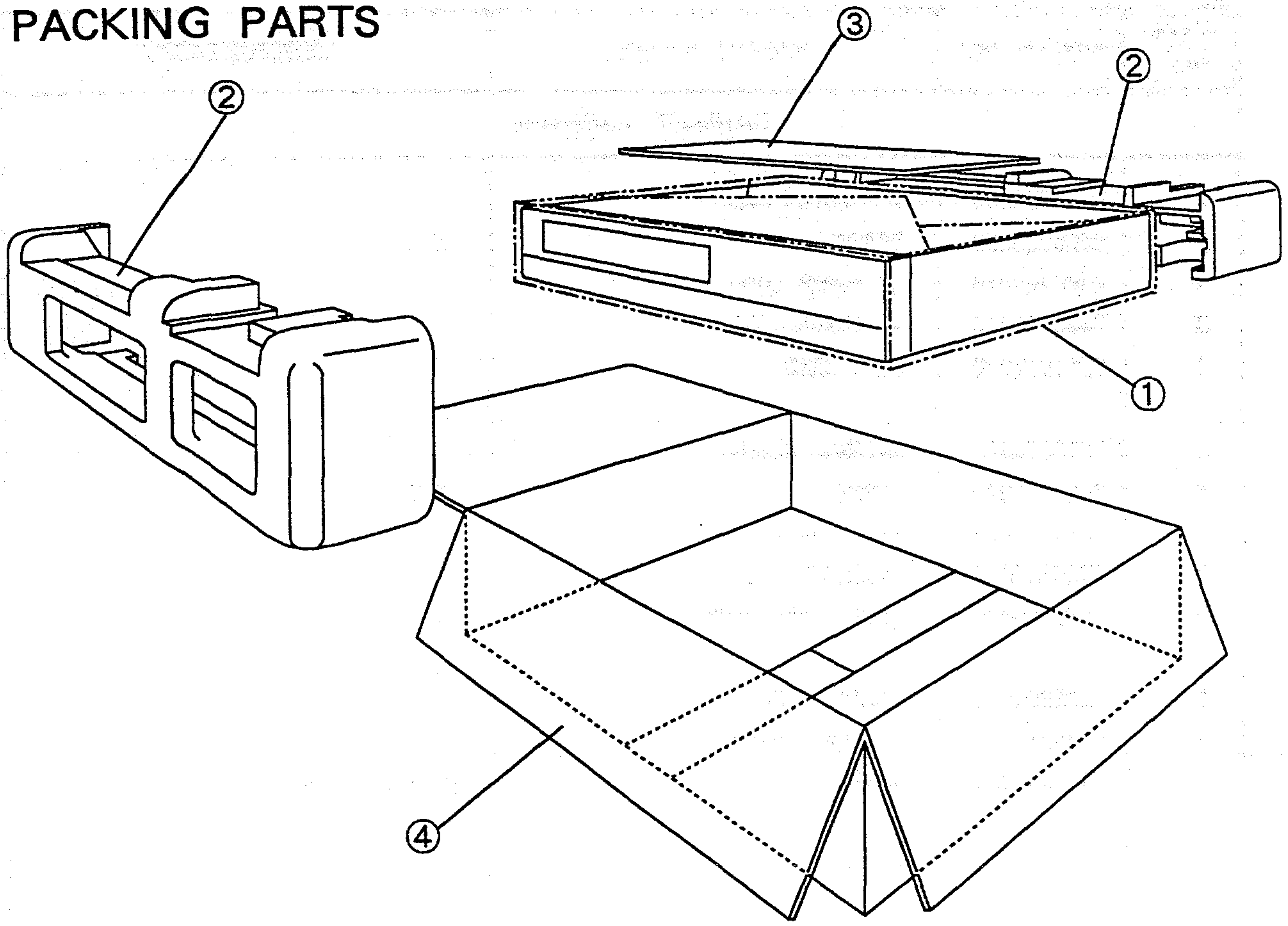
Note:

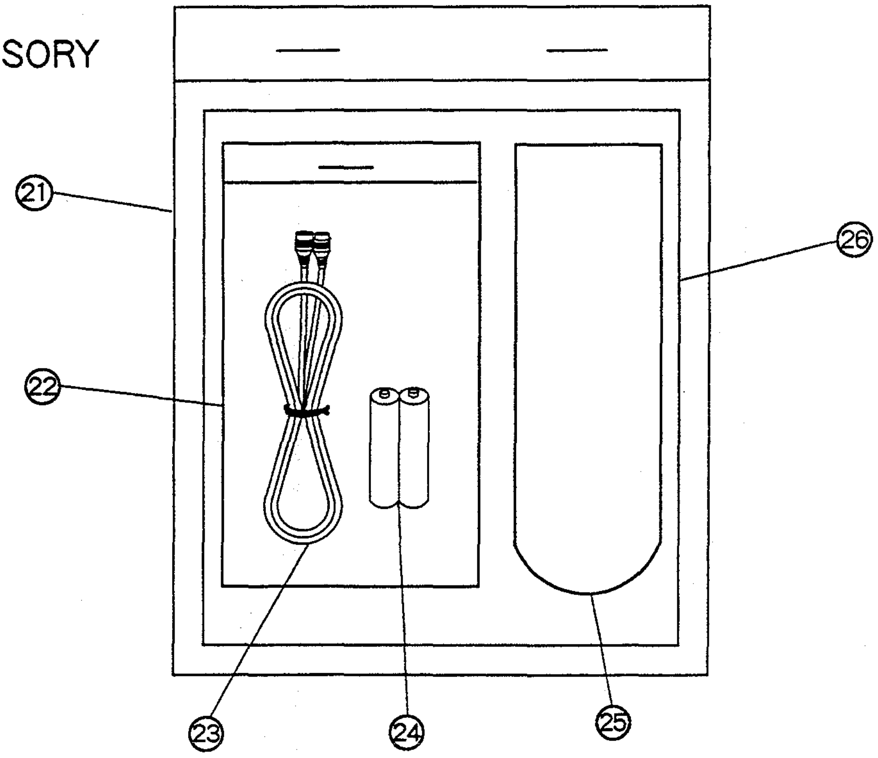
Broken AC power cord must be exchanged with a new original power cord.

ITEM NO.	PARTS NO.	PARTS NAME	DESCRIPTION
CABINET ASSEMBLY			
1	968C020090	TOP COVER ASSY	
2	669D223080	SCREW	3X10
3	246C101020	AC POWER CORD	[B, IR]
3	246C101010	AC POWER CORD	[E, S, Y]
4	621C027010	CORD BAND	
5	761B170010	ANTENNA COVER	
6	669D359040	SCREW	3X12
7	701B262030	FRONT UNIT	
8	702B855010	CASSETTE DOOR	
9	752C009030	DOOR PANEL ASSY	
10	702B854010	TIMER PANEL	
11	590A267010	BOTTOM PANEL	
12	669D220030	SCREW	3X10 46LA005

2. PACKING PARTS



ACCESSORY



ITEM NO.	PARTS NO.	PARTS NAME	DESCRIPTION
PACKING PARTS			
1	831D190030	PACKING SHEET	800X800
2	803A319010	PACKING CUSHION	
3	----------	ACCESSORY	
4	802B389020	PACKING CASE	[B]
4	802B389010	PACKING CASE	[E]
4	802B389030	PACKING CASE	[IR]
4	802B389040	PACKING CASE	[S]
4	802B389060	PACKING CASE	[Y]
ACCESSORY			
21	831D181020	PACKING BAG	375X250X0.06
22	831D198020	PACKING BAG	
23	242D231030	CABLE	1.5m
24	----------	BATTERY	
25	939P477010	REMOTE HAND UNIT	
26	872C056060	INSTRUCTION BOOK	[B, IR]
26	872C056050	INSTRUCTION BOOK	[E]
26	872C059000	INSTRUCTION BOOK	[S]
26	872C056040	INSTRUCTION BOOK	[Y]

3. ELECTRICAL PARTS

INTEGRATED CIRCUITS

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
IC101	272P150010	IC	M51496P
IC102	266P192010	IC	LA7910 [E, IR, S, Y]
IC201	272P221020	IC	XRA7254S
IC2A0	272P701020	IC	LA7393A
IC2A1	272P702010	IC	LC8992
IC2A3	272P265010	IC	BA7021
IC310	272P234010	IC	LA7295
IC311	272P400010	IC	NJM2233BL
IC4A0	274P162020	IC	MN67492MSK
IC4A1	272P237010	IC	LA6324N
IC4A2	272P235010	IC	TA7291S
IC501	274P163010	IC	M35010-051SP
IC5A0	274P161010	IC	M37420M6-490SP
IC8A0	274P167020	IC	μPD75216AGF-669-3BE [B, IR]
IC8A0	274P168010	IC	μPD75217GF-608-3BE [E, S]
IC8A0	274P167010	IC	μPD75216AGF-670-3BE [Y]
IC8A1	263P170020	IC	CAT35C102P/
IC8A2	266P010020	IC	μPC574J-K
IC901	272P237010	IC	LA6324N

TRANSISTORS

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
Q 02	260P544010	TRANSISTOR	JA101-P, Q [E]
Q 101	260P419030	TRANSISTOR	2SC2724-D
Q 102	260P544010	TRANSISTOR	JA101-P, Q
Q 107	260P419030	TRANSISTOR	2SC2724-D
Q 116	260P632010	TRANSISTOR	DTC124ES [E, Y]
Q 208	260P560010	TRANSISTOR	2SA933S-R, S
Q 210	260P419030	TRANSISTOR	2SC2724-D
Q 231	260P560010	TRANSISTOR	2SA933S-R, S
Q 233	260P419030	TRANSISTOR	2SC2724-D
Q 271	260P560010	TRANSISTOR	2SA933S-R, S
Q 275	260P419030	TRANSISTOR	2SC2724-D
Q 2B1	260P654020	TRANSISTOR	2SC2058S-P
Q 2B5	260P632010	TRANSISTOR	DTC124ES
Q 2B6	260P654020	TRANSISTOR	2SC2058S-P
Q 2C5	260P632010	TRANSISTOR	DTC124ES
Q 2C6	260P544010	TRANSISTOR	JA101-P, Q
Q 2C8	260P654020	TRANSISTOR	2SC2058S-P
Q 2D0	260P654020	TRANSISTOR	2SC2058S-P
Q 2D4	260P560010	TRANSISTOR	2SA933S-R, S
Q 2D5	260P654020	TRANSISTOR	2SC2058S-P
Q 2D6	260P255040	TRANSISTOR	2SA950-Y
Q 2D9	260P559040	TRANSISTOR	2SC1740S-R, S
Q 2E0	260P559040	TRANSISTOR	2SC1740S-R, S
Q 2E1	260P562040	TRANSISTOR	2SA952-K
Q 2E3	260P560010	TRANSISTOR	2SA933S-R, S
Q 2M0	260P559040	TRANSISTOR	2SC1740S-R, S
Q 2P0	260P560010	TRANSISTOR	2SA933S-R, S
Q 2P1	260P654020	TRANSISTOR	2SC2058S-P
Q 2P2	260P654020	TRANSISTOR	2SC2058S-P
Q 310	260P629060	TRANSISTOR	2SC3331-S, T, U
Q 4A0	260P543010	TRANSISTOR	JC501-P, Q
Q 4A2	260P543010	TRANSISTOR	JC501-P, Q
Q 4A3	260P559060	TRANSISTOR	2SC1740S-S, E
Q 4A4	260P560040	TRANSISTOR	2SA933S-S
Q 4A7	260P544010	TRANSISTOR	JA101-P, Q
Q 4A8	260P544010	TRANSISTOR	JA101-P, Q
Q 501	260P544010	TRANSISTOR	JA101-P, Q
Q 502	260P632010	TRANSISTOR	DTC124ES
Q 503	260P544010	TRANSISTOR	JA101-P, Q
Q 504	260P559060	TRANSISTOR	2SC1740S-S, E
Q 506	260P544010	TRANSISTOR	JA101-P, Q [E, S, Y]
Q 508	260P632010	TRANSISTOR	DTC124ES
Q 571	268P014020	PHOTO TRANSISTOR	PN205L-(NC)
Q 572	268P014020	PHOTO TRANSISTOR	PN205L-(NC)
Q 574	268P044010	PHOTO INTERRUPTER	ON2270-(LZ).MI
Q 575	268P045010	PHOTO INTERRUPTER	GP1L52V
Q 5A7	260P559060	TRANSISTOR	2SC1740S-S, E
Q 5A8	260P419030	TRANSISTOR	2SC2724-D
Q 5B4	260P543010	TRANSISTOR	JC501-P, Q
Q 5B8	260P543010	TRANSISTOR	JC501-P, Q
Q 5C0	260P632010	TRANSISTOR	DTC124ES
Q 5C1	260P603010	TRANSISTOR	DTA124ES/UN4112
Q 8A0	260P543010	TRANSISTOR	JC501-P, Q
Q 8A1	260P544010	TRANSISTOR	JA101-P, Q
Q 8A2	260P544010	TRANSISTOR	JA101-P, Q
Q 8A5	260P544010	TRANSISTOR	JA101-P, Q
Q 8A8	260P559060	TRANSISTOR	2SC1740S-S, E
Q 8A9	260P559060	TRANSISTOR	2SC1740S-S, E
Q 901	260P560010	TRANSISTOR	2SA933S-R, S
Q 902	260P628060	TRANSISTOR	2SA1619A-Q, R, S
Q 903	260P560030	TRANSISTOR	2SA933S
Q 906	260P630010	TRANSISTOR	2SD2012
Q 907	260P630010	TRANSISTOR	2SD2012
Q 908	260P630010	TRANSISTOR	2SD2012
Q 971	260P630010	TRANSISTOR	2SD2012

DIODES

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
D 204	264P568010	DIODE	1SS252
D 2A3	264P568010	DIODE	1SS252
D 2A6	264P568010	DIODE	1SS252
D 2A9	264P568010	DIODE	1SS252
D 2B0	264P568010	DIODE	1SS252
D 2B1	264P568010	DIODE	1SS252
D 2B2	264P568010	DIODE	1SS252
D 2B3	264P568010	DIODE	1SS252
D 4A0	264P568010	DIODE	1SS252
D 4A6	264P568010	DIODE	1SS252
D 501	264P568010	DIODE	1SS252
D 570	264P307020	LIGHT EMITTING DIODE	GL-451
D 571	264P515010	DIODE	MA165
D 5A0	264P568010	DIODE	1SS252
D 5A3	264P568010	DIODE	1SS252
D 5A4	264P568010	DIODE	1SS252
D 5A6	264P568010	DIODE	1SS252
D 5B9	264P452030	DIODE	HZ5C3
D 5C0	264P568010	DIODE	1SS252

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
D 5C1	264P568010	DIODE	1SS252
D 5C9	264P568010	DIODE	1SS252
D 5D2	264P568010	DIODE	1SS252
D 8A3	264P568010	DIODE	1SS252
D 8A5	264P568010	DIODE	1SS252
D 8A6	264P568010	DIODE	1SS252
D 8A7	264P568010	DIODE	1SS252
D 8A8	264P568010	DIODE	1SS252
D 8B0	264P568010	DIODE	1SS252
D 8B1	264P568010	DIODE	1SS252
D 8B2	264P568010	DIODE	1SS252
D 8B3	264P568010	DIODE	1SS252
D 8J1	264P568010	DIODE	1SS252 [Y]
D 8J3	264P568010	DIODE	1SS252 [B, E, S, Y]
D 8J4	264P568010	DIODE	1SS252 [B]
D 8J5	264P568010	DIODE	1SS252 [E]
D 8J7	264P568010	DIODE	1SS252 [E, S]
D 8Z0	264P501040	DIODE	HZ3ALL
D 8Z1	264P485050	DIODE	RD7. 5FB1
D 8Z2	264P193080	DIODE	MZ309B2/HZ9B24
D 8Z3	264P342070	DIODE	HZ4C2
D 901	264P101050	DIODE	RM 1B
D 902	264P101050	DIODE	RM 1B
D 903	264P101050	DIODE	RM 1B
D 904	264P101050	DIODE	RM 1B
D 905	264P500020	DIODE	EM01Z
D 906	264P500020	DIODE	EM01Z
D 907	264P500020	DIODE	EM01Z
D 908	264P500020	DIODE	EM01Z
D 913	264P500020	DIODE	EM01Z
D 914	264P500020	DIODE	EM01Z
D 915	264P568010	DIODE	1SS252
D 916	264P568010	DIODE	1SS252
D 917	264P104040	DIODE	HZ30-2

FILTERS

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
CF101	296P024040	CERAMIC TRAP	TPS6. 0MB [B, IR]
CF101	296P076010	CERAMIC TRAP	[E]
CF101	296P024030	CERAMIC TRAP	TPS5. 5MB [S]
CF101	296P104010	CERAMIC TRAP	EFC-S3F01W3A [Y]
CF151	296P014030	CERAMIC FILTER	SFE-6. 0MHz [B, IR]
CF151	296P014090	CERAMIC FILTER	SFE-5. 5MC2 [E, S, Y]
CF152	296P121020	CERAMIC FILTER	CDA6. 0ME23 [B, IR]
CF152	296P121010	CERAMIC FILTER	[E, S, Y]
CF5A0	299P118070	CERAMIC RESONATOR	CST8. 00MTW
SF101	296P119040	SAW FILTER	SAF39. 5MZG81Z [B, IR]
SF101	296P119030	SAW FILTER	[E, S]
SF101	296P119010	SAW FILTER	[Y]

DELAY LINES

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
DL2A0	337P081010	DELAY LINE	

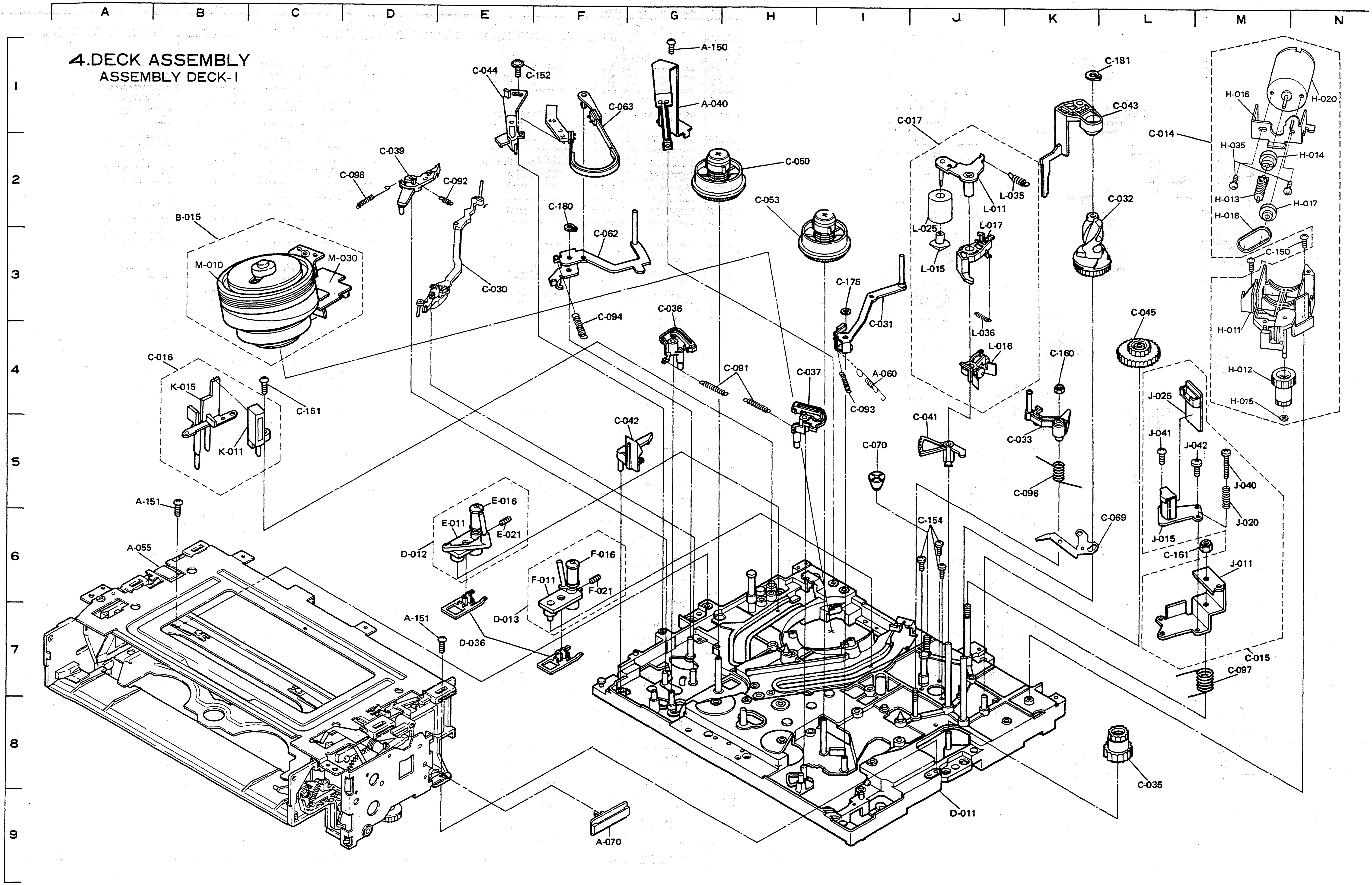
COILS

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
L 11	325C111030	PEAKING COIL	10 μH-K
L 102	323P175010	VIF COIL	LLD-TANK
L 103	323P175090	VIF COIL	AFT 38. 9/39. 5MHz
L 107	325C170040	PEAKING COIL	1. 8 μH-K [B, E]
L 107	325C170050	PEAKING COIL	2. 2 μH-K [IR, S, Y]
L 108	325C166040	PEAKING COIL	12 μH-J [B, IR]
L 108	325C166030	PEAKING COIL	10 μH-J [E]
L 108	325C166050	PEAKING COIL	15 μH-J [S]
L 108	325C166000	PEAKING COIL	5. 6 μH-J [Y]
L 109	325C166060	PEAKING COIL	18 μH-J
L 110	325C120070	PEAKING COIL	3. 3 μH-K [Y]
L 113	325C165020	PEAKING COIL	1. 2 μH-J [B]
L 113	325C165030	PEAKING COIL	1. 5 μH-J [E, IR, Y]
L 113	325C165040	PEAKING COIL	1. 8 μH-J [S]
L 152	325C166090	PEAKING COIL	33 μH-J [B, IR]
L 152	325C167010	PEAKING COIL	47 μH-J [E, S, Y]
L 153	325C121040	PEAKING COIL	12 μH-K
L 154	325C166090	PEAKING COIL	33 μH-J
L 201	325C122050	PEAKING COIL	100 μH-K
L 202	325C122050	PEAKING COIL	100 μH-K
L 203	325C168010	PEAKING COIL	330 μH-J
L 206	325C166070	PEAKING COIL	22 μH-J
L 210	325C166070	PEAKING COIL	22 μH-J
L 211	325C166000	PEAKING COIL	5. 6 μH-J
L 213	325C122050	PEAKING COIL	100 μH-K
L 218	325C167070	PEAKING COIL	150 μH-J
L 219	325C167040	PEAKING COIL	82 μH-J
L 220	325C167010	PEAKING COIL	47 μH-J
L 2A8	325C166060	PEAKING COIL	18 μH-J
L 2A9	325C167080	PEAKING COIL	180 μH-J
L 2B0	325C167030	PEAKING COIL	68 μH-J
L 2B1	325C166060	PEAKING COIL	18 μH-J
L 2B4	325C165070	PEAKING COIL	3. 3 μH-J
L 2B5	325C166020	PEAKING COIL	8. 2 μH-J
L 2B8	321C112050	RF COIL	100 μH-K
L 2B9	321C112050	RF COIL	100 μH-K
L 2C0	325C122050	PEAKING COIL	100 μH-K
L 2C1	325C167010	PEAKING COIL	47 μH-J
L 2C2	325C166090	PEAKING COIL	33 μH-J
L 2C3	325C122050	PEAKING COIL	100 μH-K
L 2P1	325C166090	PEAKING COIL	33 μH-J
L 2P5	325C166090	PEAKING COIL	33 μH-J
L 310	321C113070	RF COIL	1000 μH-K
L 311	321C114080	RF COIL	8200 μH-J
L 312	321C114080	RF COIL	8200 μH-J
L 501	325C262050	PEAKING COIL	100 μH-K
L 502	325C266050	PEAKING COIL	15 μH-J
L 503	325C262050	PEAKING COIL	100 μH-K
L 507	325C266080	PEAKING COIL	27 μH-J [E, S, Y]
L 570	299P124010	LATCH MAGNET	
L 5A1	325C262050	PEAKING COIL	100 μH-K
L 5A2	325C266070	PEAKING COIL	22 μH-J SO
L 5A4	325C124080	PEAKING COIL	0. 56 μH-M
L 5A5	325C124050	PEAKING COIL	0. 33 μH-M
L 5A6	325C124050	PEAKING COIL	0. 33 μH-M

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
TRANSFORMERS			
T 310	409P423010	AUDIO BIAS OSC	705720044D
T 901	350P576020	POWER	PRI [B]
T 901	350P576010	POWER	PRI [E, IR, S, Y]
VARIABLE RESISTORS			
VR101	127C080090	VR-SEMIFIXED	1/5W B20kΩ-M
VR202	127C290040	VR-SEMIFIXED	1/10W B1kΩ-N
VR203	127C290080	VR-SEMIFIXED	1/10W B10kΩ-N
VR2A0	127C080090	VR-SEMIFIXED	1/5W B20kΩ-M
VR2A1	127C090090	VR-SEMIFIXED	1/5W B20kΩ-M
VR2A2	127C080080	VR-SEMIFIXED	1/5W B10kΩ-M
VR2A3	127C080050	VR-SEMIFIXED	1/5W B2kΩ-M
VR2A5	127C080090	VR-SEMIFIXED	1/5W B20kΩ-M
VR310	127C381020	VR-SEMIFIXED	1/5W B100kΩ-M
VR311	127C380080	VR-SEMIFIXED	1/5W B10kΩ-M
VR4A0	127C081020	VR-SEMIFIXED	1/5W B100kΩ-M
RESISTORS			
R 5K3	103P398090	FUSE	1/2W 5.6Ω-J [B]
R 904	109P052010	FUSE	1/4W 100Ω-J
R 920	109P052050	FUSE	1/4W 6.8Ω-J
CAPACITORS AND TRIMMERS			
VC8A0	202P109020	TRIMMER CAPACITOR	4.2pF-20pF
SWITCHES			
S 8A3	432P089020	KEY BOARD SWITCH	CH-UP
S 8A6	432P089020	KEY BOARD SWITCH	PB
S 8A8	432P089040	KEY BOARD SWITCH	POWER
S 8B3	432P089020	KEY BOARD SWITCH	CH-DOWN
S 8B6	432P089020	KEY BOARD SWITCH	REC
S 8B7	432P089020	KEY BOARD SWITCH	STOP
S 8B8	432P089040	KEY BOARD SWITCH	EJECT
S 8C6	432P089020	KEY BOARD SWITCH	FF
S 8C7	432P089020	KEY BOARD SWITCH	STILL/PAUSE
S 8C8	432P089020	KEY BOARD SWITCH	REW
S 8D5	432P089020	KEY BOARD SWITCH	ONE KEY PROGRAM
SW570	439P019010	MODE SELECT SWITCH	
SW571	439P020010	LIMIT SWITCH	SPPB-62
MISCELLANEOUS			
	242D297020	IF CABLE	
CU 01	295P276020	RF CONVERTER	MDLK6B7 [B, IR]
CU 01	295P276010	RF CONVERTER	[E, S, Y]
DC CC	243C061020	CARD LEAD	9P
DM CM	243C061070	CARD LEAD	21P
F 901	283D046080	FUSE	0.63A-T
F 902	283D047050	FUSE	2.5A-T
F 903	283D047050	FUSE	2.5A-T
J 3A0	451C058020	CONNECTOR	21P
M 470	288P117010	CAPSTAN MOTOR	
M 570	288P088040	DRUM MOTOR	
M 571	288D025010	LOADING MOTOR	
MF TF	243C072010	CARD LEAD	9P
MK TK	243C048040	CARD LEAD	19P
MS NS	243C050010	CARD LEAD	9P
MX PX	243C065030	CARD LEAD	25P
T 370	460P060050	HEAD	
T 371	460P061020	FE HEAD	
TU 01	295P194030	TUNER	TERB1-054A [B]
TU 01	295P261020	TUNER	ENV-57819F1C [E]
TU 01	295P260030	TUNER	ENV-59808F2 [IR]
TU 01	295P254010	TUNER	ENV-77818F2 [S]
TU 01	295P297010	TUNER	TERE1-0J9A [Y]
V 8A0	253P093010	TUBE FLUOR	FIP9FM11
X 2A0	285P083010	CRYSTAL RESONATOR	4.43362MHz
X 501	285P084010	CRYSTAL RESONATOR	17.7345MHz
X 8A0	285P063040	CRYSTAL RESONATOR	4.19430MHz
Z 8A0	939P481020	PREAMP UNIT	HC-479M
PRINTED CIRCUIT BOARD ASSY'S			
	928C510070	DECK PCB ASSY	
	927B444002	HEAD-AMP PCB ASSY	[B, IR]
	927B444001	HEAD-AMP PCB ASSY	[E, S, Y]
	928D056020	MAIN PCB ASSY	[B]
	928D056030	MAIN PCB ASSY	[E]
	928D056050	MAIN PCB ASSY	[IR]
	928D056040	MAIN PCB ASSY	[S]
	928D056010	MAIN PCB ASSY	[Y]
	928D057020	POWER PCB ASSY	[B]
	928D057030	POWER PCB ASSY	[E]
	928D057050	POWER PCB ASSY	[IR]
	928D057040	POWER PCB ASSY	[S]
	928D057010	POWER PCB ASSY	[Y]
	928D058020	TIMER PCB ASSY	[B]
	928D058030	TIMER PCB ASSY	[E]
	928D058050	TIMER PCB ASSY	[IR]
	928D058040	TIMER PCB ASSY	[S]
	928D058010	TIMER PCB ASSY	[Y]
	927B593012	VTR PCB ASSY	[B]
	927B593013	VTR PCB ASSY	[E]
	927B593015	VTR PCB ASSY	[IR]
	927B593014	VTR PCB ASSY	[S]
	927B593011	VTR PCB ASSY	[Y]

4.DECK ASSEMBLY

ASSEMBLY DECK-1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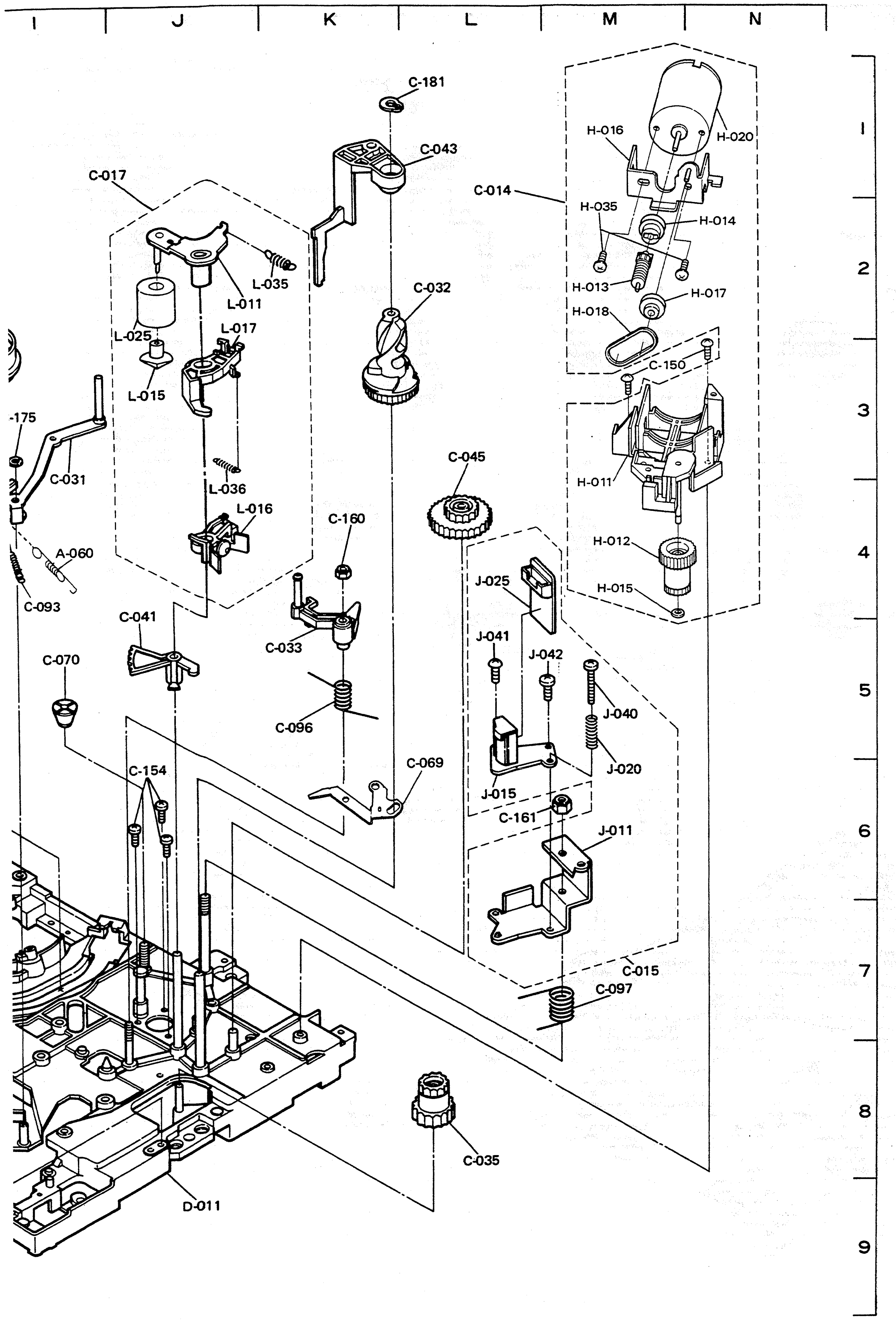


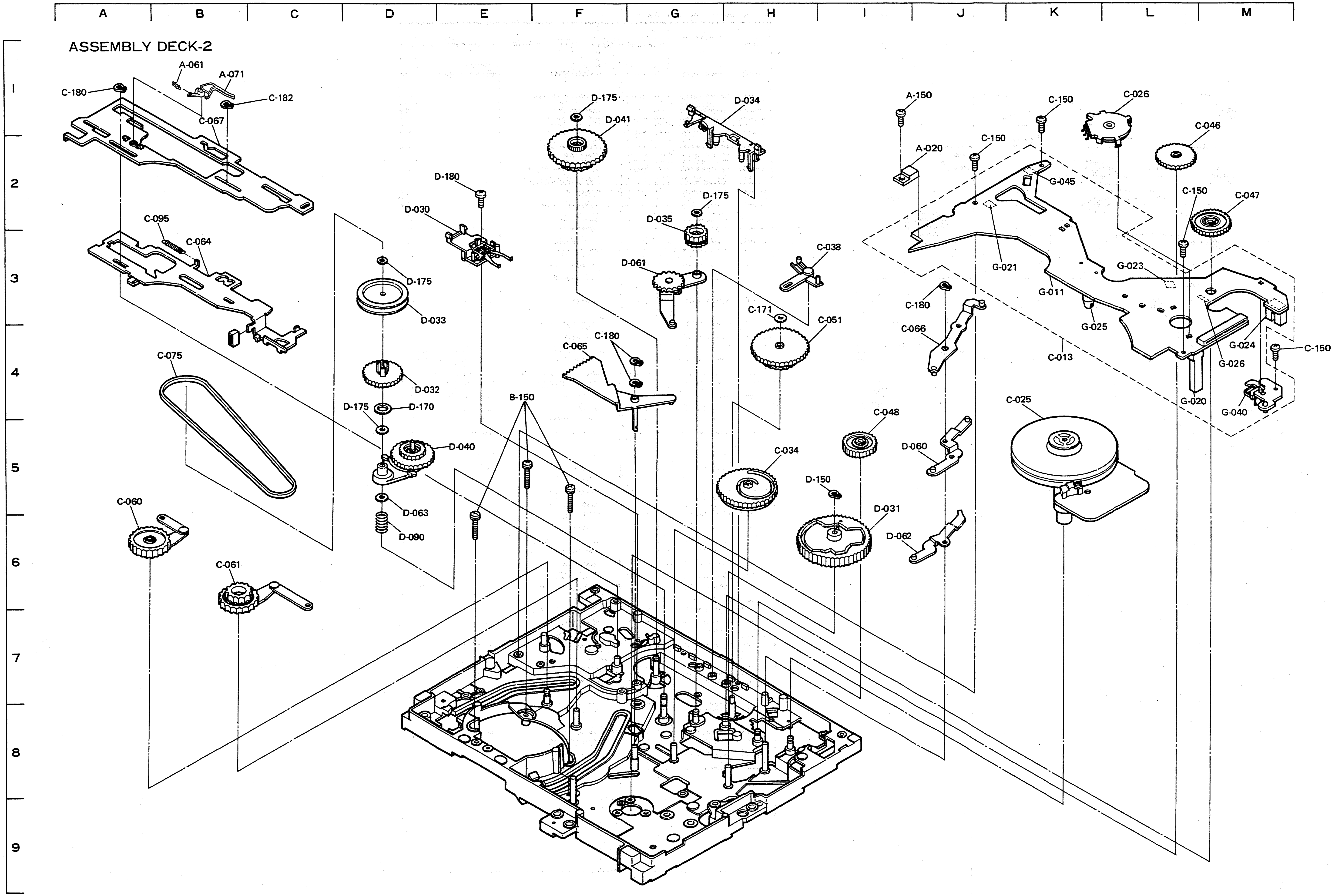
＊Settelled Service Parts

ITEM	PARTS No.	＊	ADDRESS		PARTS NAME	DESCRIPTION	Qt.
B-015	948B328001	○	B-2		ASSY-DRUM		01
M-010	927B499021	○	B-3		ASSY-UPPER-DRUM		01
M-030	288P088040	○	C-3		MOTOR-DRUM	M570	01
D-011	948A071020		J-9		ASSY-MAIN-PLATE		01
D-012	948D018040	○	D-6		ASSY-TAPE-GUIDE-S		01
D-012	948D018050	○	D-6		ASSY-TAPE-GUIDE-S		01
D-012	948D018060	○	D-6		ASSY-TAPE-GUIDE-S		01
E-011	635B059010	○	E-6		TAPE-GUIDE-S		01
E-011	635B059020	○	E-6		TAPE-GUIDE-S		01
E-011	635B059030	○	E-6		TAPE-GUIDE-S		01
E-016	522D177010	○	E-5		GUIDE-ROLLER		01
E-021	669D197020		E-6		SET-SCREW-F	M3×0.5-4	01
D-013	948D019040	○	E-7		ASSY-TAPE-GUIDE-T		01
D-013	948D019050	○	E-7		ASSY-TAPE-GUIDE-T		01
D-013	948D019060	○	E-7		ASSY-TAPE-GUIDE-T		01
F-011	635B060010	○	F-6		TAPE-GUIDE-T		01
F-011	635B060020	○	F-6		TAPE-GUIDE-T		01
F-011	635B060030	○	F-6		TAPE-GUIDE-T		01
F-016	522D177010	○	F-6		GUIDE-ROLLER		01
F-021	669D197020		F-6		SET-SCREW-F	M3×0.5-4	01
D-036	621D522010	○	E-7		SLIDER		02
C-014	928D031010	○	N-5		ASSY-LOAD-MOTOR		01
H-011	641B313010		O-4		HOLDER-MOTOR		01
H-012	641C783010		N-4		GEAR-WHEEL		01
H-013	641C801010		N-2		GEAR-WORM		01
H-014	621D784010		O-2		CUPLING-2		01
H-015	552C007030	○	N-4		CUT-WASHER	2.5	01
H-016	593C059010		N-1		PLATE-HOLDER-M2		01
H-017	621D793010	○	O-2		PULLEY-L		01
H-018	521D074010	○	N-2		BELT-LM		01
H-020	288D025010	○	O-1		MOTOR-LOADING	M571	01
H-035	650P300030		N-2		SCREW-F-FE-PAN	M3×0.5-3	02
C-015	928D032030	○	M-7		ASSY-AC-HEAD		01
J-011	592C760010		M-6		ARM-AC		01
J-015	460P060050	○	L-6		HEAD-AC	T370	01
J-020	570D593010		M-6		SPRING-AC		01
J-025	215C393010		L-4		PWB-AC-AF		01
J-040	650P261040		M-5		SCREW-F-FE-PAN	M2.6×0.45-14	01
J-041	669D227010	○	L-5		SCREW-TS	M2.6×6	01
J-042	669D206030		L-5		SCREW		01
C-016	928D033010		B-4		ASSY-FE-HEAD		01
K-011	460P061020	○	B-5		HEAD-FE	T371	01
K-015	641C870010		B-4		HOLDER-FE		01
C-017	948D020010	○	I-1		ASSY-ARM-PINCH		01
L-011	591B536010		J-2		ARM-PINCH		01
L-015	621D523010	○	J-3		CAP-ROLLER		01
L-016	641C797010	○	J-4		LEVER-CAM-PINCH		01
L-017	641C798010	○	J-2		LEVER-ARM-PINCH		01
L-025	522D174010	○	J-2		ROLLER-PINCH		01
L-035	572D314010	○	K-2		SPRING-PINCH		01
L-036	572D315010	○	J-4		SPRING-CAM-PINCH		01
C-030	641B368010	○	E-3		ARM-TENS-REG-S2		01
C-031	591B551020	○	I-3		ARM-TENS-REG-T		01
C-032	641B314020	○	L-2		CAM-PINCH		01
C-033	635B068010	○	K-5		ARM-TU-G		01
C-035	641C782010	○	L-8		GEAR-JOINT		01
C-036	641C791010	○	G-3		BRAKE-MAIN-S		01
C-037	641C792010	○	H-4		BRAKE-MAIN-T		01

＊Settelled Service Parts

ITEM	PARTS No.	＊	ADDRESS		PARTS NAME	DESCRIPTION	Qt.
C-039	641C796010	○	D-2		LEVER-TENS		01
C-041	641C991010	○	J-4		ARM-GEAR-TU-G2		01
C-042	641C804010	○	F-5		LEVER-REC-SAFETY		01
C-043	641C806010	○	L-1		CAP-ARM-PINCH		01
C-044	641C861010		E-1		HOLDER-T-BAND		01
C-045	621D509010	○	L-3		GEAR-1		01
C-050	522C076020	○	H-2		UNIT-REEL-DISK		01
C-053	522C076040	○	I-3		UNIT-REEL-DISK		01
C-062	591B547010	○	F-3		ARM-TENSION		01
C-063	591B552010	○	F-1		BELT-TENS-BRAKE		01
C-069	592C930010		L-6		LEVER-TENS-TU		01
C-070	635D063010		I-5		NUT-TAPER		01
C-091	572D309010	○	H-4		SPRING-M-B		02
C-092	572D391010	○	E-2		SPRING-TENS-REG-S2		01
C-093	572D390010	○	I-4		SPRING-TENS-REG-T2		01
C-094	572D312010	○	F-3		SPRING-TENS		01
C-096	572D317010	○	K-5		SPRING-TU-G		01
C-097	572D318010	○	M-7		SPRING-ARM-A/C		01
C-098	572D328010	○	D-2		SPRING-REC-SAFETY		01
C-150	669D227010	○	M-3		SCREW-TS	M2.6×6	02
C-151	669D227030	○	C-4		SCREW-TS	M2.6×10	01
C-152	669D228010		E-1		SCREW-TS-SEMS	M2.6×6	01
C-154	669D285040		J-6		SCREW-TB-PAN	M2.6×8	03
C-160	674D081020	○	K-4		NUT-NYLON	M3×0.5	01
C-161	674D100010	○	L-6		NUT-NYLON-S	M4×0.7	01
C-175	552C007030	○	I-3		CUT-WASHER	2.5	01
C-180	685C009010	○	F-2		GRIP-RING		01
C-181	685C009020	○	L-1		GRIP-RING		01
A-040	299C025010	○	G-1		BRUSH		01
A-055	590A256020	○	A-6		UNIT-F/L-F		01
A-060	572D401010	○	I-4		SPRING-RS		01
A-070	641C906010	○	F-9		HOLDER-CARD		01
A-150	669D227010	○	G-1		SCREW-TS	M2.6×6	01
A-151	669D227020	○	A-5	D-7	SCREW-TS	M2.6×8	02

ASSEMBLY DECK-2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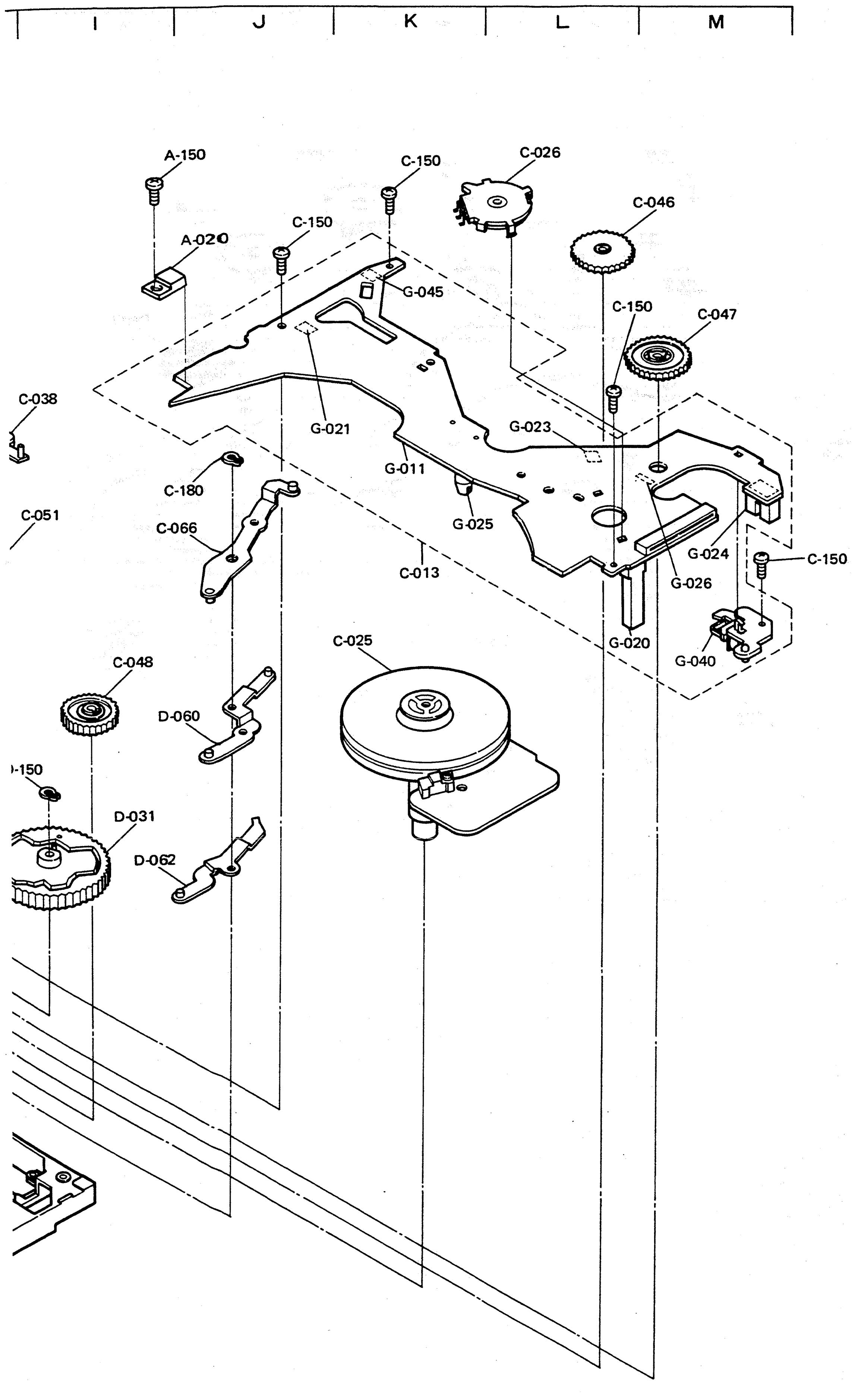
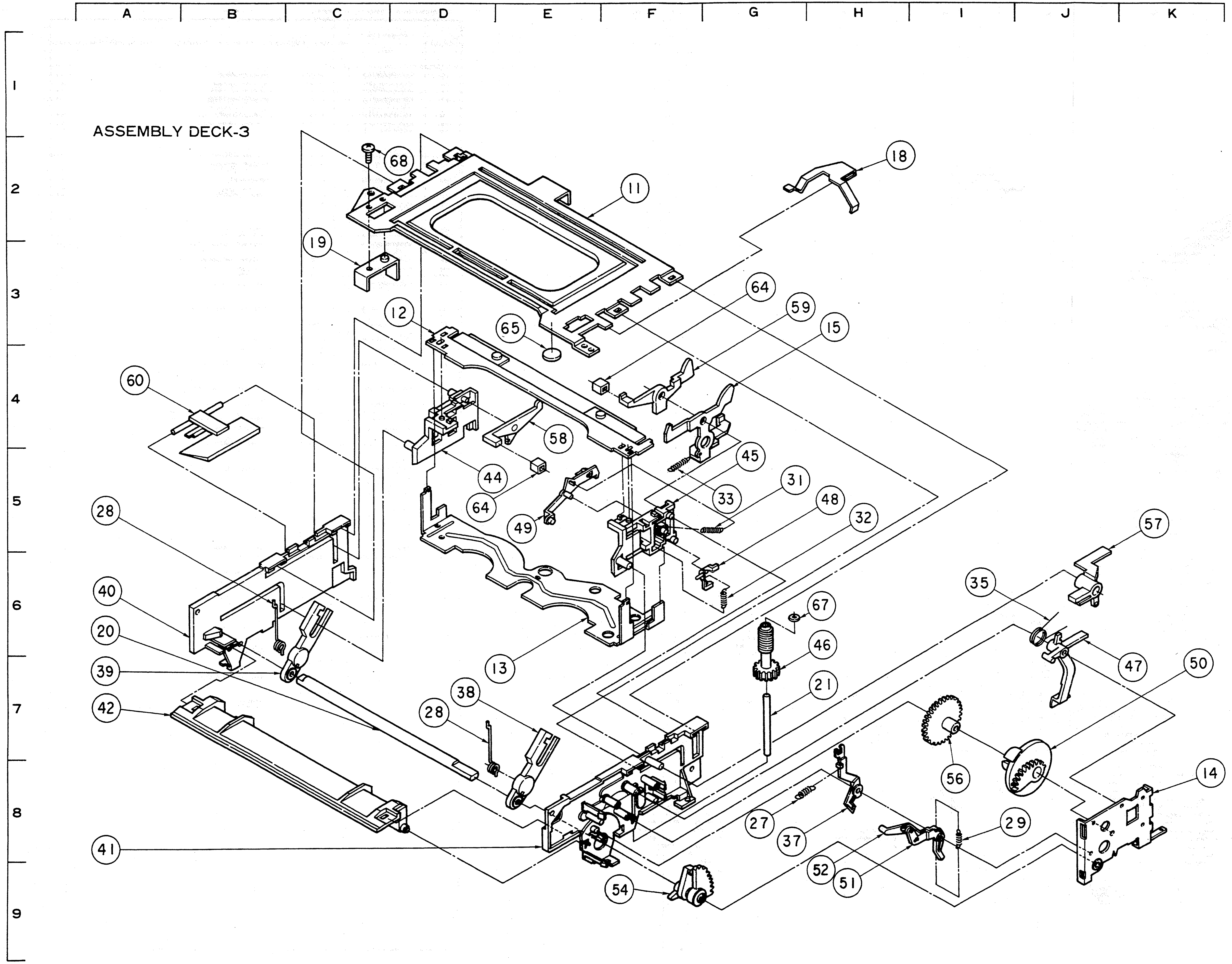
C-180
A-061
A-071
C-182
C-067
C-095
C-064
C-075
C-060
C-061
D-180
D-030
D-175
D-033
D-032
D-175
D-170
D-040
D-063
D-090
B-150
D-175
D-041
C-065
C-180
D-034
D-175
D-035
D-061
C-038
C-171
C-051
C-034
C-048
D-150
D-031
A-150
A-020
C-150
C-150
C-026
C-046
G-045
C-150
C-047
G-021
G-023
G-011
C-180
C-066
G-025
C-013
G-024
G-026
C-150
G-020
G-040
C-025
D-060
D-062



∗ Settelled Service Parts

ITEM	PARTS No.	∗	ADDRESS		PARTS NAME	DESCRIPTION	Qt.
B-150	669D431040		E-4		SCREW-SEMS	M2. 6×0. 45-10	03
D-030	641B310010	○	E-2		UNIT-LEVER-SHIFT		01
D-031	641B323010	○	I-5		CAM-MAIN-1		01
D-032	641C789020	○	D-4		PULLEY-GEAR		01
D-033	641C790020	○	D-3		PULLEY-BELT		01
D-034	641C815010		H-1		HOLDER-P-CAM		01
D-035	621D516010	○	G-2		GEAR-F/L-1		01
D-040	522C077020	○	E-5		UNIT-GEAR-IDLER		01
D-041	522C083010	○	F-1		UNIT-GEAR-REEL-S		01
D-060	591B559010		I-5		LEVER-C		01
D-061	591B567010	○	G-3		LEVER-F/L-ID		01
D-062	592C830010		I-6		LEVER-RS		01
D-063	596D057010	○	D-5		WASHER-R	T=0. 3	01
D-090	572D306010	○	D-6		SPRING-SHIFT		01
D-150	685C009010	○	H-5		GRIP-RING		01
D-170	552C010040	○	D-4		WASHER-THRUST	6. 7×12×0. 13	01
D-175	552C007030	○	D-3 G-2	D-4 F-1	CUT-WASHER	2. 5	04
D-180	669D227010	○	E-2		SCREW-TS	M2. 6×6	01
C-013	928C510070	○	K-4		ASSY-PWB-DECK		01
G-011	240A651010		K-3		PWB-DECK		01
G-020	268P014020	○	L-4		TRANSISTOR	Q571 PN205L-(NC)	01
G-021	268P014020	○	J-3		TRANSISTOR	Q572 PN205L-(NC)	01
G-023	268P044010	○	L-3		PHOTO-INTERRUPTER	Q574 ON2270-R	01
G-024	268P045010	○	M-4		PHOTO-INTERRUPTER	Q575 GP1L52	01
G-025	264P307020	○	K-4		DIODE-LE	D570 GL-451	01
G-026	264P515010	○	M-4		DIODE	D571 MA165	01
G-040	299P124010	○	M-4		LATCH-MAGNET	L570	01
G-045	439P020010	○	K-2		SW-LIMIT	SW571	01
C-025	288P117010	○	K-4		MOTOR-CP	M470	01
C-026	439P019010	○	L-1		SW-MODE-SELECT-F	SW570	01
C-034	641B324010	○	H-5		CAM-MAIN-2		01
C-038	641C795010	○	I-3		LEVER-IDLER-S		01
C-046	621D517010	○	M-1		GEAR-F/L-2		01
C-047	621D518010	○	M-2		GEAR-F/L-3		01
C-048	621D519010	○	I-4		GEAR-F/L-4		01
C-051	522C078040	○	I-3		UNIT-GEAR-REEL		01
C-060	591B543010	○	A-5		ARM-LOAD-S		01
C-061	591B544010	○	B-6		ARM-LOAD-T		01
C-064	591B554010		B-3		PLATE-CAM-C		01
C-065	591B557010	○	F-4		ARM-GEAR-LOAD		01
C-066	591B558010		J-4		LEVER-B		01
C-067	592C949010		B-1		UNIT-PLATE-CAM-B3		01
C-075	521D062010	○	B-4		BELT-REEL		01
C-095	572D313010	○	B-2		SPRING-CAM-C		01
C-150	669D227010	○	J-2 L-2	K-1 M-4	SCREW-TS	M2. 6×6	04
C-171	552C006020	○	H-3		WASHER-THRUST	2. 0×0. 13	01
C-180	685C009010	○	A-1 J-3	F-4	GRIP-RING		04
C-182	552C009050	○	C-1		CUT-WASHER		01
A-020	260P630010	○	J-2		TRANSISTOR	Q971 2SD2012	01
A-061	572D404010	○	B-1		SPRING-B-RS		01
A-071	641C928010	○	B-1		LEVER-B-RS		01
A-150	669D227010	○	I-1		SCREW-TS	M2. 6×6	01

ASSEMBLY DECK-3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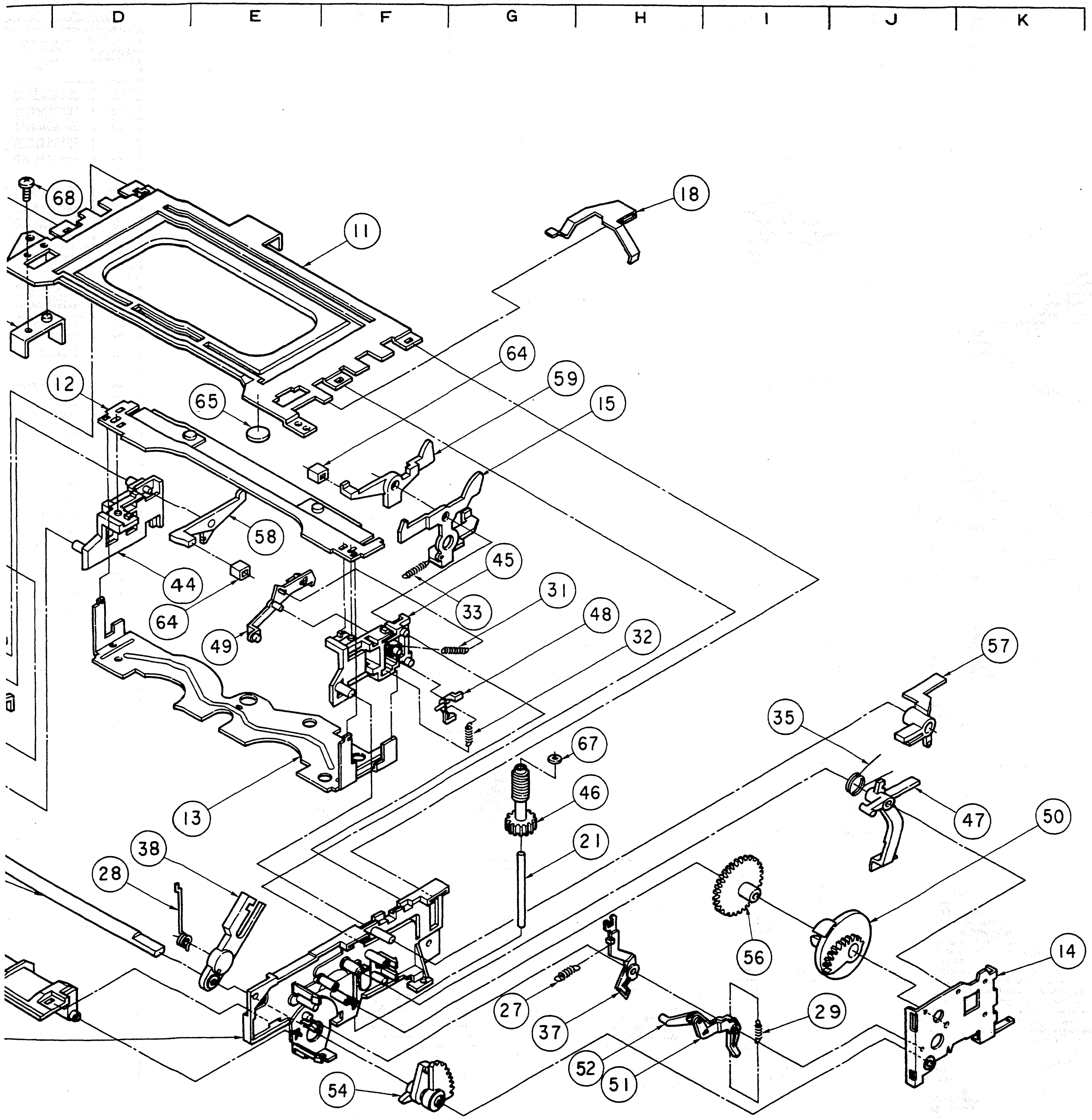
∗ Settelled Service

ITEM	PARTS No.
11	591B545010
12	592C758010
13	591B546010
14	591B542010
15	592C851010
18	596D150010
19	596D217010
20	631D134010
21	631D135010
27	(not used)
28	572D301010
29	572D389010
31	572D304010
32	572D305010
33	572D380010
35	572D367010
37	(not used)
38	641B315010
39	641B315020
40	641A110010
41	641A109010
42	641B306010
44	641B309010
45	641B307010
46	621D513010
47	621D514010
48	621D515010
49	641C794010
50	641C793010
51	641C897010
52	641C898010
54	641C858010
56	641C814010
57	641C857010
58	621D585010
59	621D586010
60	641C878010
64	642D494010
65	(not used)
67	552C001040
68	--------



* Settelled Service Parts

ITEM	PARTS No.	*	ADDRESS		PARTS NAME	DESCRIPTION	Qt.
11	591B545010		F-2		PLATE-ROOF		01
12	592C758010		D-3		PLATE-UPPER		01
13	591B546010		E-7		PLATE-BOTTOM		01
14	591B542010		K-8		PLATE-SIDE-TU		01
15	592C851010		H-3		LEVER-LOCK-FL		01
18	596D150010		H-2		PLATE-EARTH		01
19	596D217010		C-3		PLATE-GUARD		01
20	631D134010		A-6		SHAFT-FL		01
21	631D135010		H-7		SHAFT-WORM		01
27	(not used)		G-8				
28	572D301010	○	A-5	D-7	SPRING-FL		02
29	572D389010		J-8		SPRING-DOOR-SUB		01
31	572D304010		G-5		SPRING-OPENER-LID		01
32	572D305010		H-5		SPRING-JUT-FL		01
33	572D380010		G-5		SPRING-LEVER-LOCK		01
35	572D367010		I-6		SPRING-LEVER-SW		01
37	(not used)		G-8				
38	641B315010	○	D-7		ARM-FL		01
39	641B315020	○	A-7		ARM-FL		01
40	641A110010		A-6		HOLDER-SIDE-SP		01
41	641A109010		A-8		HOLDER-SIDE-TU		01
42	641B306010		A-7		GUIDE-INSERT		01
44	641B309010		D-5		HOUSING-CASSETTE-SP		01
45	641B307010		G-5		HOUSING-CASSETTE-TU		01
46	621D513010	○	H-6		GEAR-WORM-FL		01
47	621D514010		K-7		LEVER-SW-FL		01
48	621D515010	○	H-5		JUT		01
49	641C794010		E-5		OPENER-LID-CAS		01
50	641C793010	○	K-7		GEAR-DRIVE		01
51	641C897010	○	H-9		ARM-FL-DOOR-A		01
52	641C898010	○	H-9		ARM-FL-DOOR-B		01
54	641C858010	○	F-9		ARM-LOCK		01
56	641C814010	○	I-8		GEAR-W-H-F/L		01
57	641C857010		K-5		LEVER-PICK-CAS		01
58	621D585010		E-4		LEVER-CAS-SP		01
59	621D586010		G-3		LEVER-CAS-TU		01
60	641C878010		A-4		STOPPER-SP-FL		01
64	642D494010		D-5	G-3	RUBBER-FL		02
65	(not used)		E-3				
67	552C001040		H-6		WASHER-THRUST	3 T0.25	01
68	--------		D-2		SCREW	2.6-5	01

SCHEMATIC DIAGRAM

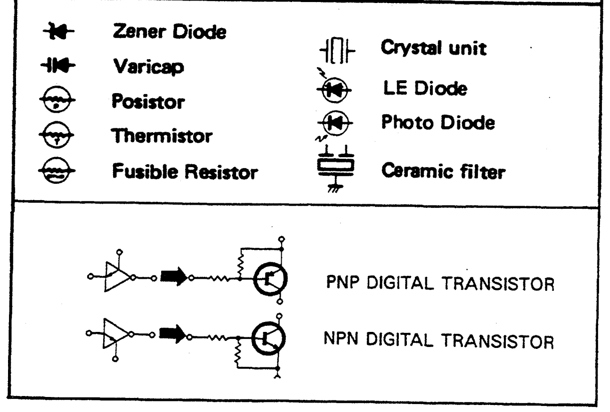
NOTE 1:

1. DC voltages were measured from points indicated to the circuit ground with a digital voltmeter.
2. The voltages parenthesised are on SP recording mode. While those without parenthesised on SP play back mode.

NOTE 2:

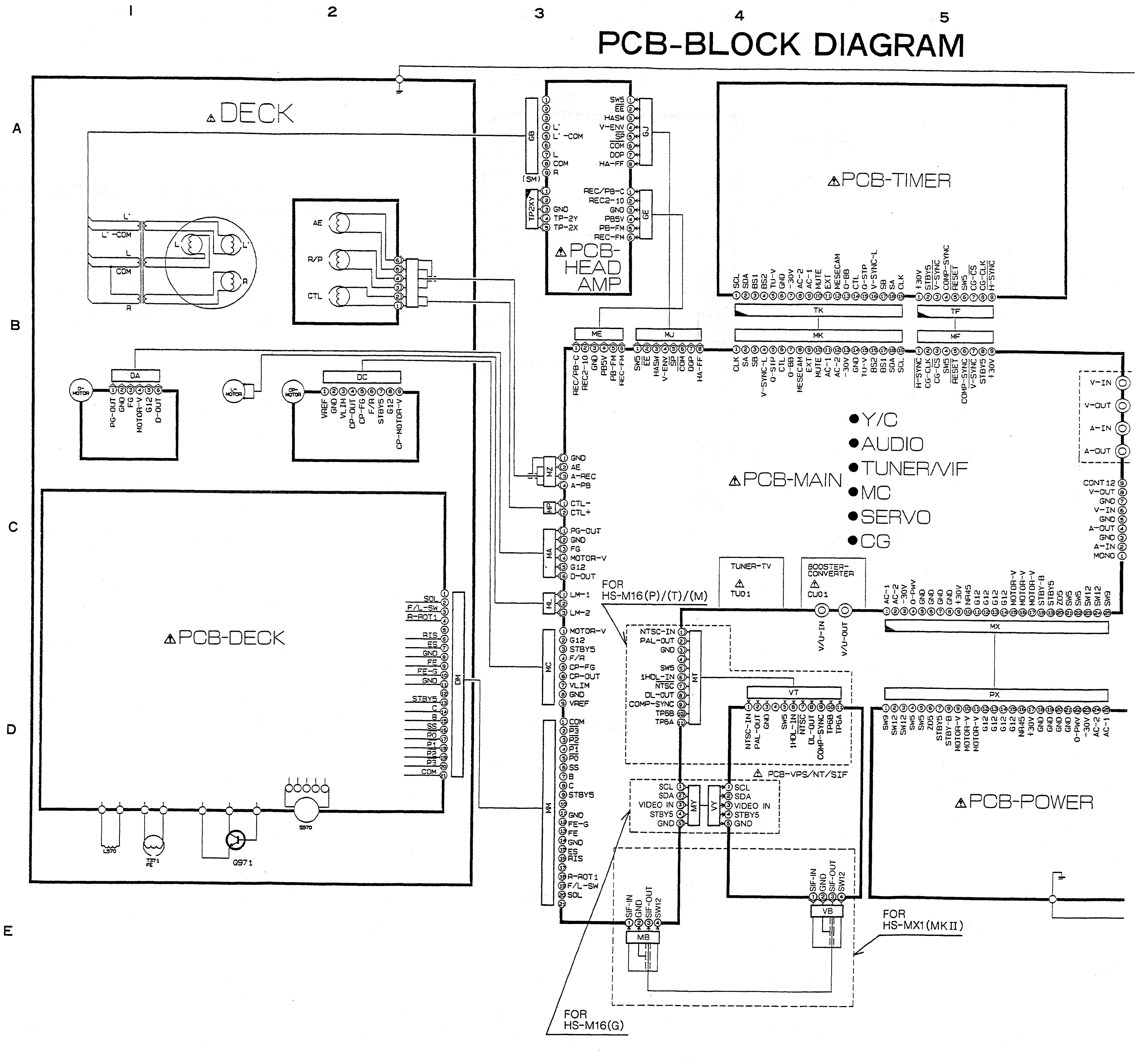
1. The unit of resistance "ohm" entirely omitted.
   Accordingly, K = 1000 ohms
   M = 1000K ohms.
2. The wattage of resistor, not specifically designated, is 1/4 watt except CHIP resistors.
3. Resistors, not specifically designated, are carbon resistors or CHIP resistors.
4. The marks of resistors are as follows.
   CE : Cemented resistor
   MB : Metal oxide film resistor (type B)
   Ⓢ : Fixed composition resistors
   Ⓦ : Wire wound resistor
   Ⓜ : Metal film resistor
5. The tolerance of resistor value, not specifically designated, is: ±5%, K = ±10% M = ±20%
6. The unit of capacitance, not specifically designated, is:
   a) μF, for numbers less than 1
   b) PF, for numbers more than 1
7. Capacitors, not specifically designated are Ceramic capacitors or CHIP capacitors except electrolytic capacitors.
8. The marks of capacitors are as follows:
   ALM : Aluminus electrolytic capacitor
   MF : Polyester capacitor
   PP : Polypropylene film capacitor
   TAN : Tantalum capacitor
   SC : Semiconductor Ceramic Capacitors
   TF : Twin film capacitor
   NP : Non polarized electrolytic capacitor
   ⫩ : Electrolytic capacitor
9. The DC working voltage of capacitor, not specifically designated is: 50V
10. The tolerance of capacitor value, not specifically designated is: ±10%
    and J = ±5% K = ±10% M = ±20% $P = {}^{+100\%}_{-\ 0\%}$
    C = ±0.25PF D = ±0.5PF F = ±1PF $Z = {}^{+80\%}_{-20\%}$ N=±30%
11. Ceramic capacitors with the marks RH, UJ, SL, etc. are temperature compensating types.

SPECIFIC SYMBOL


Zener Diode
Varicap
Positor
Thermistor
Fusible Resistor
Crystal unit
LE Diode
Photo Diode
Ceramic filter
PNP DIGITAL TRANSISTOR
NPN DIGITAL TRANSISTOR

This is a basic schematic diagram. Some sets may be subject to modification according to engineering improvement.

PCB-BLOCK DIAGRAM


1
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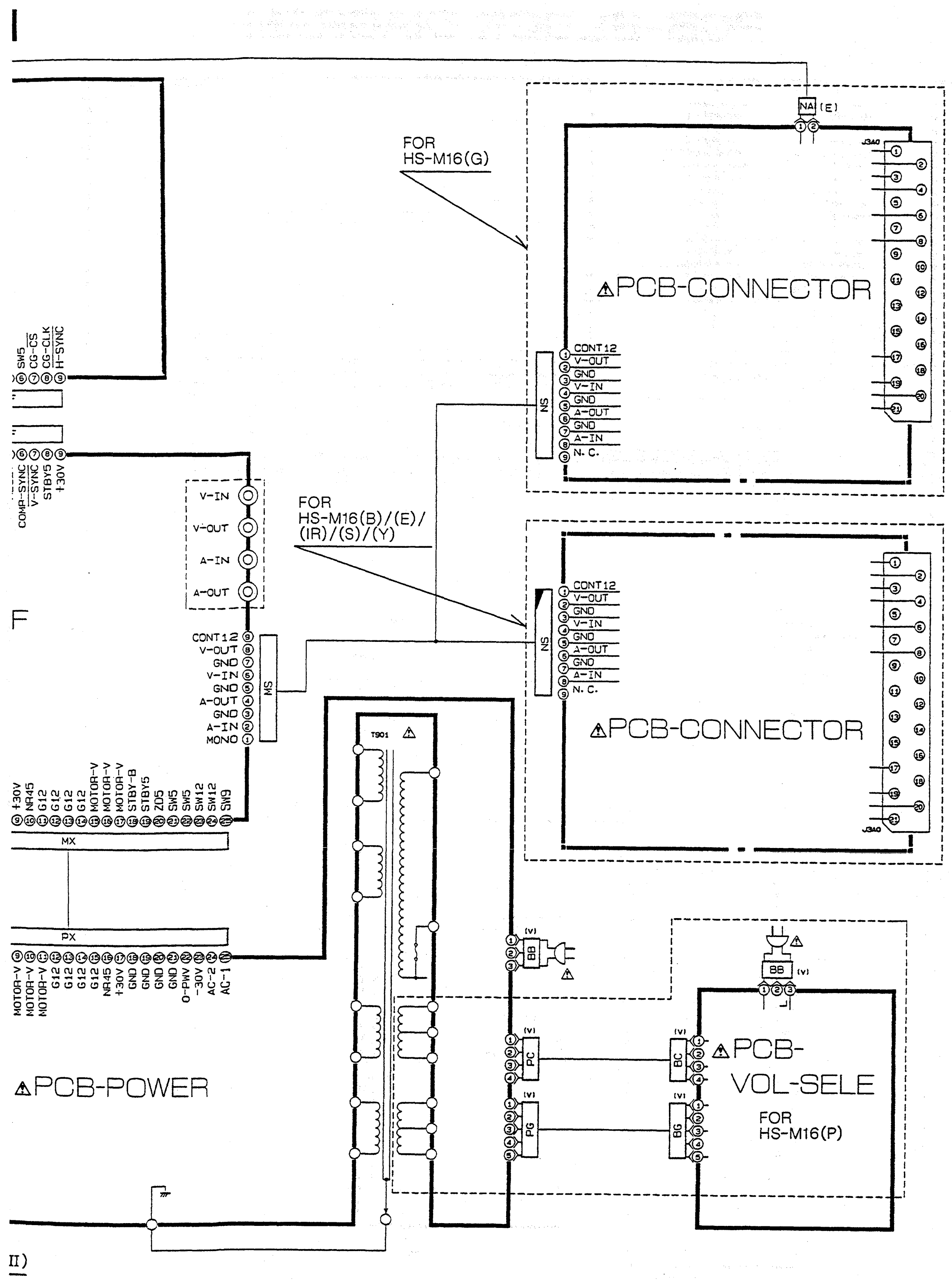
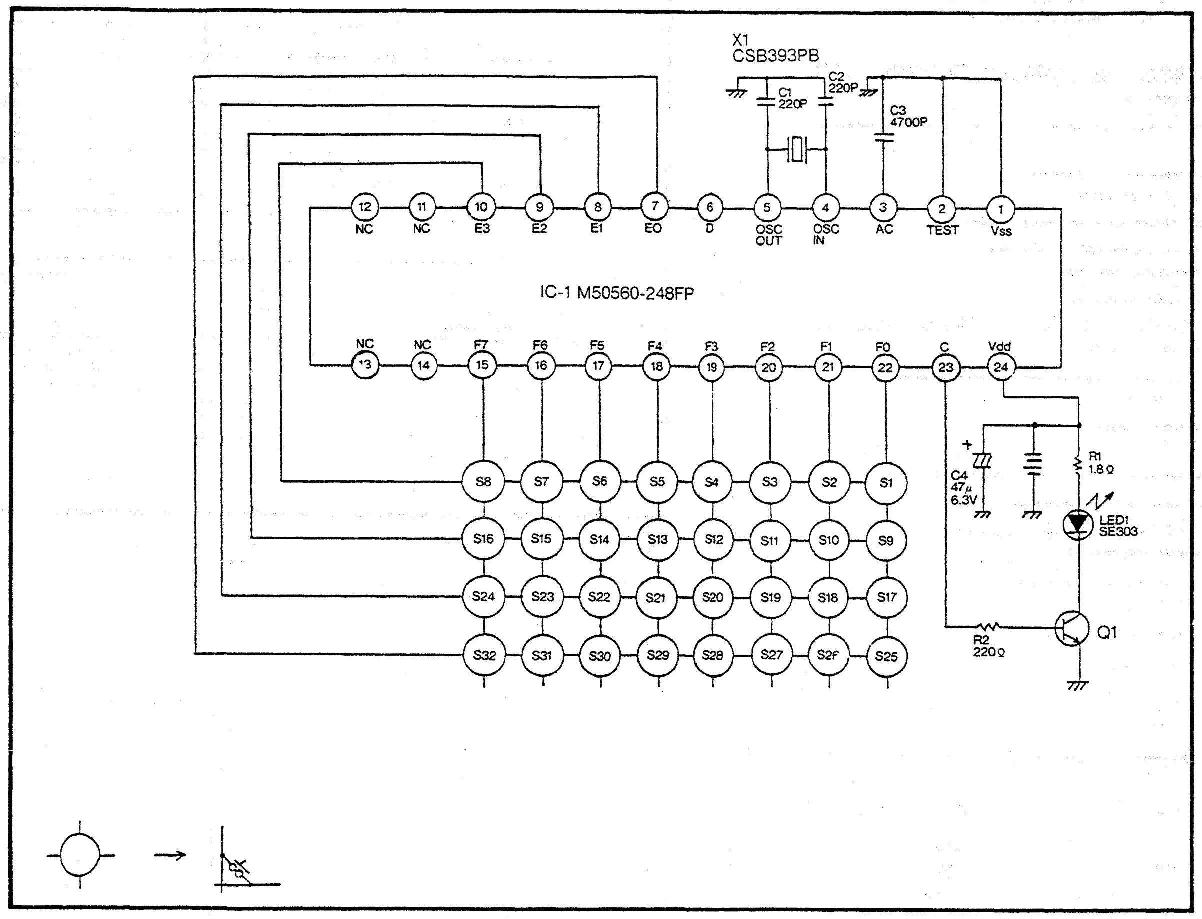
3
4
5
A
B
C
D
E
⚠DECK
L'
L'-COM
L
COM
R
AE
R/P
CTL
DA
CP-MOTOR
PG-OUT
GND
FG
MOTOR-V
G12
D-OUT
L-MOTOR
DC
VREF
GND
VLIM
CP-OUT
CP-FG
F/R
STBY5
G12
CP-MOTOR-V
⚠PCB-DECK
SOL
F/L-SW
R-ROT1
RIS
ES
GND
FE
FE-G
GND
STBY5
C
B
SS
P0
P1
P2
P3
COM
DM
L570
T371
Q971
S570
GB
(SM)
L'
L'-COM
L
COM
R
TP2XY
GND
TP-2Y
TP-2X
SW5
EE
HASW
V-ENV
SP
COM
DOP
HA-FF
GJ
REC/PB-C
REC2-10
GND
PB5V
PB-FM
REC-FM
GE
⚠PCB-HEAD AMP
⚠PCB-TIMER
SCL
SDA
BS1
BS2
TU-V
GND
-30V
AC-2
AC-1
MUTE
EXT
MESECAM
O-BB
CTL
O-STP
V-SYNC-L
SB
SA
CLK
+30V
STBY5
V-SYNC
COMP-SYNC
RESET
SW5
CG-CS
CG-CLK
H-SYNC
TK
TF
ME
MJ
MK
MF
MZ
GND
AE
A-REC
A-PB
MP
CTL-
CTL+
MA
PG-OUT
GND
FG
MOTOR-V
G12
D-OUT
ML
LM-1
LM-2
MC
MOTOR-V
G12
STBY5
F/R
CP-FG
CP-OUT
VLIM
GND
VREF
MM
COM
P3
P2
P1
P0
SS
B
C
STBY5
GND
FE-G
FE
GND
ES
RIS
R-ROT1
F/L-SW
SOL
⚠PCB-MAIN
●Y/C
●AUDIO
●TUNER/VIF
●MC
●SERVO
●CG
V-IN
V-OUT
A-IN
A-OUT
CONT12
V-OUT
GND
V-IN
GND
A-OUT
GND
A-IN
MONO
TUNER-TV
⚠
TU01
BOOSTER-CONVERTER
⚠
CU01
V/U-IN
V/U-OUT
FOR HS-M16(P)/(T)/(M)
NTSC-IN
PAL-OUT
GND
SW5
1HDL-IN
NTSC
DL-OUT
COMP-SYNC
TP6B
TP6A
MT
VT
⚠ PCB-VPS/NT/SIF
SCL
SDA
VIDEO IN
STBY5
GND
MY
VY
SIF-IN
GND
SIF-OUT
SW12
MB
VB
FOR HS-M16(G)
FOR HS-MX1(MKII)
AC-1
AC-2
-30V
O-PWV
GND
+30V
NR45
G12
MOTOR-V
STBY-B
ZO5
SW5
SW12
SW9
MX
PX
⚠PCB-POWER

6 7 8 9 10 11 12 13



NA (E)
FOR
HS-M16(G)
⚠PCB-CONNECTOR
J340
NS
CONT12
V-OUT
GND
V-IN
GND
A-OUT
GND
A-IN
N. C.
FOR
HS-M16(B)/(E)/
(IR)/(S)/(Y)
⚠PCB-CONNECTOR
SW5
CG-CS
CG-CLK
H-SYNC
COMP-SYNC
V-SYNC
STBY5
+30V
V-IN
V-OUT
A-IN
A-OUT
F
CONT12
V-OUT
GND
V-IN
GND
A-OUT
GND
A-IN
MONO
MS
+30V
NR45
G12
G12
G12
G12
MOTOR-V
MOTOR-V
STBY-B
STBY5
ZD5
SW5
SW5
SW12
SW12
SW9
MX
T901 ⚠
PX
MOTOR-V
MOTOR-V
MOTOR-V
G12
G12
G12
G12
NR45
+30V
GND
GND
GND
O-PWV
-30V
AC-2
AC-1
BB
PC
PG
BB
BC
BG
⚠PCB-
VOL-SELE
FOR
HS-M16(P)
⚠PCB-POWER
II)

TRANSMITTER REMOTE CONTROL

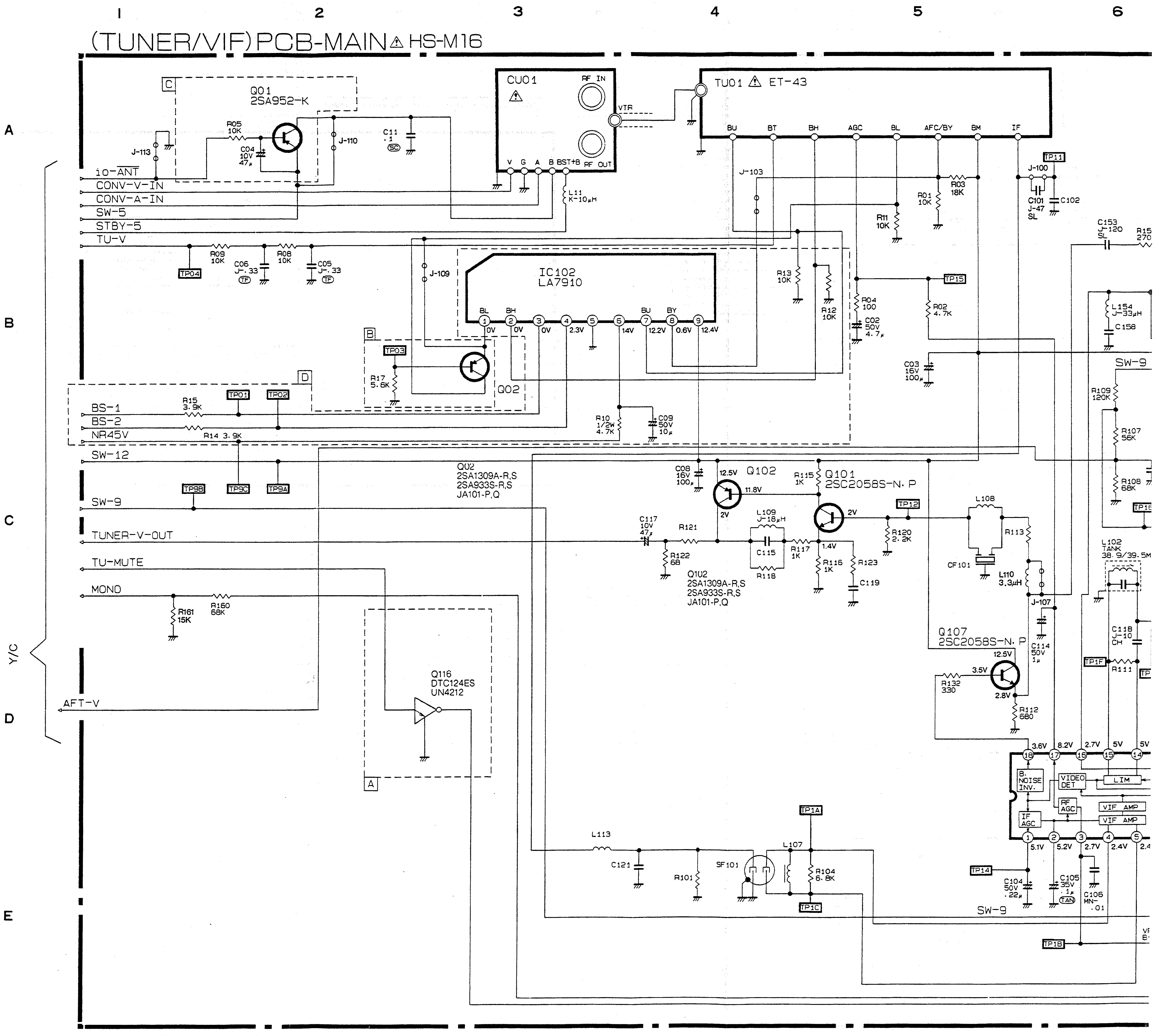


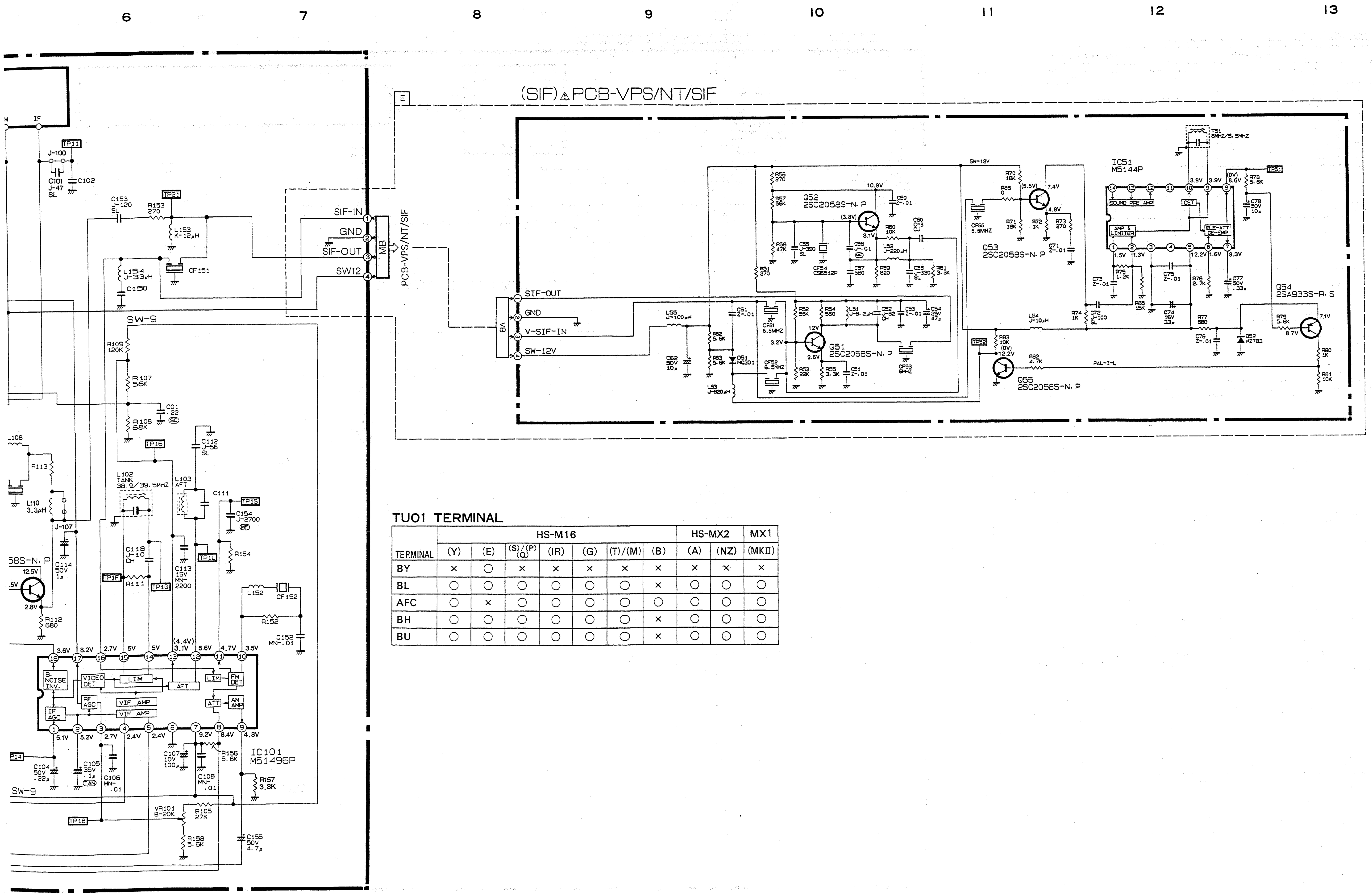
X1
CSB393PB
C1
220P
C2
220P
C3
4700P
NC
NC
E3
E2
E1
EO
D
OSC OUT
OSC IN
AC
TEST
Vss
IC-1 M50560-248FP
NC
NC
F7
F6
F5
F4
F3
F2
F1
F0
C
Vdd
S8
S7
S6
S5
S4
S3
S2
S1
S16
S15
S14
S13
S12
S11
S10
S9
S24
S23
S22
S21
S20
S19
S18
S17
S32
S31
S30
S29
S28
S27
S26
S25
C4
47μ
6.3V
R1
1.8Ω
LED1
SE303
R2
220Ω
Q1

(TUNER/VIF) ○:Employed ×:Not employed

	HS-M16							HS-MX2		MX1
MODELS / SYMBOL№	(Y)	(E)	(P)/(S)	(IR)	(T)/(M)	(B)	(G)	(A)	(NZ)	(MKII)
A AREA	○	○	×	×	×	×	○	×	×	×
B AREA	×	○	×	×	×	×	×	×	×	×
C AREA	×	×	×	×	○	×	×	○	○	×
D AREA	○	○	○	○	○	×	○	○	○	○
E AREA	×	×	×	×	×	×	×	×	×	○
J-100	×	×	○	×	○	×	×	○	○	×
J-103	×	○	×	×	×	×	×	×	×	×
J-107	×	○	○	○	○	○	×	○	○	×
J-109	○	×	○	○	○	×	○	○	○	○
J-110	○	○	○	○	×	○	○	×	×	○
J-113	○	○	○	○	×	○	○	×	×	○
C101	J-47SL	J-47SL	×	J-47SL	×	J-47SL	J-47SL	×	×	J-47SL
C102	J-47SL	J-47SL	J-33SL	J-47SL	J-33SL	J-47SL	J-47SL	×	J-33SL	J-47SL
C111	J-68RH	J-68RH	J-68RH	J-68RH	J-68RH	J-68RH	J-68RH	J-82RH	J-68RH	J-68RH
C115	J-39SL	J-39SL	J-47SL	J-33SL	J-47SL	J-33SL	J-39SL	J-39SL	J-47SL	J-39SL
C119	J-82SL	×	J-120SL	J-82SL	J-120SL	J-47SL	J-82SL	J-47SL	J-120SL	J-82SL
C121	J-5PCH	C-8PCH	C-4PCH	C-4PCH	C-4PCH	C-8PCH	J-5PCH	C-5PCH	C-4PCH	J-5PCH
C158	J-100SL	J-100SL	J-100SL	J-82SL	J-100SL	J-82SL	J-100SL	J-100SL	J-100SL	J-82SL
CF101	5.5/ 5.74/6.5	5.5/ 5.74MHz	5.5MHZ	6.0MHZ	5.5MHZ	6.0MHZ	5.5/ 5.74/6.5	5.5/ 5.74MHz	5.5MHZ	5.5/ 5.74/6.5
CF151	5.5MHZ	5.5MHZ	5.5MHZ	6.0MHZ	5.5MHZ	6.0MHZ	5.5MHZ	5.5MHZ	5.5MHZ	×
CF152	5.5MHZ	5.5MHZ	5.5MHZ	6.0MHZ	5.5MHZ	6.0MHZ	5.5MHZ	5.5MHZ	5.5MHZ	6.0MHZ
L107	K-2.2μH SHIELD	K-1.8μH SHIELD	K-2.2μH SHIELD	K-2.2μH SHIELD	K-2.2μH SHIELD	K-1.8μH SHIELD	K-2.2μH SHIELD	K-2.2μH SHIELD	K-2.2μH SHIELD	K-2.2μH SHIELD
L108	J-5.6μH	J-10μH	J-15μH	J-12μH	J-15μH	J-12μH	J-5.6μH	J-10μH	J-15μH	J-5.6μH
L110	○	×	×	×	×	×	○	×	×	○
L113	J-1.5μH	J-1.5μH	J-1.8μH	J-1.5μH	J-1.8μH	J-1.2μH	J-1.5μH	J-1.8μH	J-1.8μH	J-1.8μH
L152	J-47μH	J-47μH	J-47μH	J-33μH	J-47μH	J-33μH	J-47μH	J-47μH	J-47μH	J-33μH
R03	18K	×	18K	18K	18K	18K	18K	18K	18K	18K
R11	10K	10K	10K	10K	10K	×	10K	10K	10K	10K
R101	1.8K-F	3.9K-F	2.7K-F	1.5K-F	2.7K-F	1.5K-F	1.8K-F	2.2K	2.7K-F	1.8K-F
R111	6.8K	6.8K	2.2K	6.8K	2.2K	6.8K	6.8K	6.8K	2.2K	6.8K
R113	220	360-F	820	680	820	820	220	270	820	220
R118	3.3K	1.2K	820	3.9K	820	3.9K	3.3K	3.3K	820	3.3K
R121	150	120	120	150	120	120	150	150	120	150
R123	470	×	1.5K	470	1.5K	1.5K	470	2.7K	1.5K	470
R152	5.6K	5.6K	5.6K	2.7K	5.6K	2.7K	5.6K	5.6K	5.6K	2.7K
R154	47K	47K	47K	82K	47K	82K	47K	47K	47K	82K

(TUNER/VIF) PCB-MAIN ⚠ HS-M16

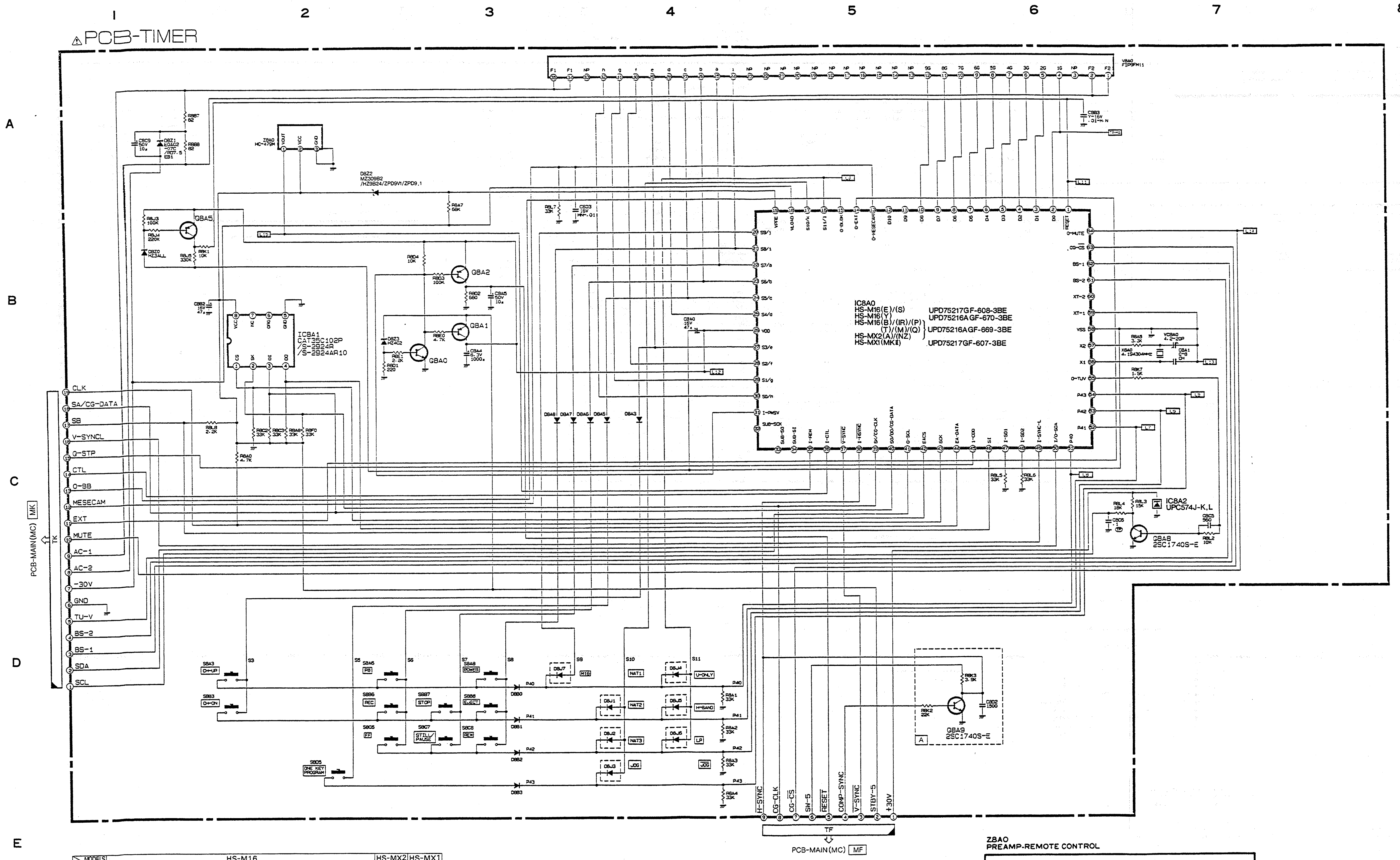

1
2
3
4
5
6
A
B
C
D
E
Y/C
C
Q01
2SA952-K
R05 10K
C04 10V 47μ
J-113
J-110
C11 .1 SC
CU01
⚠
RF IN
VTR
RF OUT
V G A B BST+8
TU01 ⚠ ET-43
BU BT BH AGC BL AFC/BY BM IF
io-ANT
CONV-V-IN
CONV-A-IN
SW-5
STBY-5
TU-V
L11 K-10μH
J-103
R03 18K
R01 10K
R11 10K
TP11
J-100
C101 J-47 SL
C102
C153 J-120 SL
R15 270
R09 10K
C06 J-.33 TF
R08 10K
C05 J-.33 TF
TP04
J-109
IC102
LA7910
BL BH BU BY
0V 0V 0V 2.3V 14V 12.2V 0.6V 12.4V
R13 10K
R12 10K
R04 100
C02 50V 4.7μ
TP15
R02 4.7K
L154 J-33μH
C158
B
TP03
R17 5.6K
Q02
D
TP01
TP02
BS-1
BS-2
NR45V
R15 3.9K
R14 3.9K
R10 1/2W 4.7K
C09 50V 10μ
C03 16V 100μ
SW-9
R109 120K
R107 56K
R108 68K
SW-12
TP9B
TP9C
TP9A
Q02
2SA1309A-R,S
2SA933S-R,S
JA101-P,Q
C08 16V 100μ
12.5V
Q102
11.8V
2V
R115 1K
Q101
2SC2058S-N, P
TP12
TP1E
L108
SW-9
TUNER-V-OUT
TU-MUTE
MONO
C117 10V 47μ
R121
L109 J-18μH
C115
R118
R117 1K
1.4V
R116 1K
R123
C119
R120 2.2K
R122 68
Q102
2SA1309A-R,S
2SA933S-R,S
JA101-P,Q
R113
CF101
L110 3.3μH
L102 TANK 38.9/39.5M
J-107
R161 15K
R160 68K
C114 50V 1μ
C118 J-10 CH
Q107
2SC2058S-N, P
12.5V
3.5V
R132 330
2.8V
R112 680
TP1F
R111
Q116
DTC124ES
UN4212
AFT-V
A
3.6V 8.2V 2.7V 5V 5V
B. NOISE INV.
VIDEO DET
LIM
RF AGC
IF AGC
VIF AMP
VIF AMP
5.1V 5.2V 2.7V 2.4V
TP1A
L113
C121
R101
SF101
L107
R104 6.8K
TP1C
TP14
C104 50V .22μ
C105 35V .1μ TAN
C106 MN- .01
SW-9
TP1B

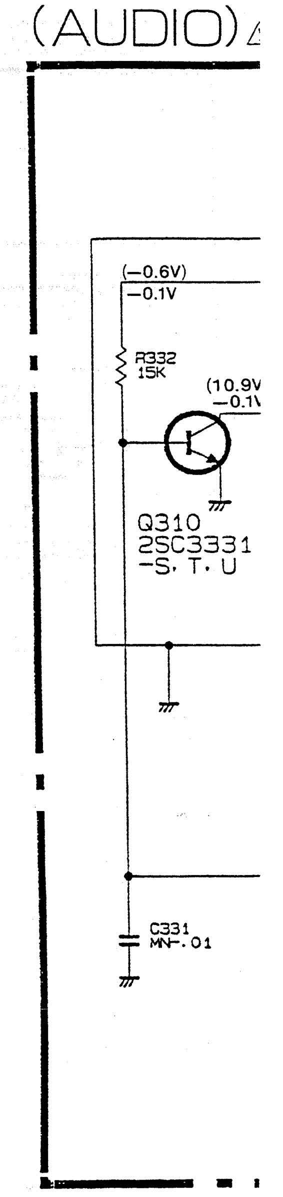

6
7
8
9
10
11
12
13
(SIF) ⚠ PCB-VPS/NT/SIF
E
IF
TP11
J-100
C101 J-47 SL
C102
C153 J-120 SL
R153 270
TP21
L153 K-12μH
L154 J-33μH
C158
CF151
SIF-IN
GND
SIF-OUT
SW12
MB
PCB-VPS/NT/SIF
VB
SIF-OUT
GND
V-SIF-IN
SW-12V
SW-9
R109 120K
R107 56K
R108 68K
C01 .22 SC
L108
R113
L110 3.3μH
J-107
C114 50V 1μ
12.5V
2.8V
R112 680
TP16
C112 J-56 SL
L102 TANK 38.9/39.5MHZ
L103 AFT
C111
TP15
C154 J-2700 MP
C118 J-10 CH
C113 16V MN-2200
TP1F
R111
TP1G
TP1L
R154
L152
CF152
R152
C152 MN-.01
3.6V
8.2V
2.7V
5V
5V
(4.4V) 3.1V
5.6V
4.7V
3.5V
B. NOISE INV.
VIDEO DET
LIM
AFT
LIM
FM DET
RF AGC
VIF AMP
ATT
AM AMP
IF AGC
VIF AMP
5.1V
5.2V
2.7V
2.4V
2.4V
9.2V
8.4V
4.8V
IC101 M51496P
TP14
C104 50V .22μ
C105 35V .1μ TAN
C106 MN-.01
C107 10V 100μ
C108 MN-.01
R156 5.6K
R157 3.3K
SW-9
VR101 B-20K
R105 27K
R158 5.6K
C155 50V 4.7μ
TP18
R56 270
R57 56K
Q52 2SC2058S-N.P
10.9V
C59 Z-.01
(3.8V)
3.1V
C60 C-3
R50 10K
R58 47K
C55 J-390 SL
CF54 CSB512P
C56 J-.01
L52 J-220μH
R51 270
C57 560
R59 820
C58 J-330 SL
R61 3.3K
C51 Z-.01
CF51 5.5MHZ
R52 56K
R54 560
L51 J-8.2μH
C52 J-82 CH
C53 Z-.01
C54 25V 47μ
L55 J-100μH
R62 5.6K
12V
3.2V
Q51 2SC2058S-N.P
2.6V
C62 50V 10μ
R63 5.6K
D51 MC301
CF52 6.5MHZ
R53 22K
R55 3.3K
C51 Z-.01
CF53 6MHZ
L53 J-820μH
SW-12V
R70 18K
R86 0
(5.5V)
7.4V
CF55 5.5MHZ
R71 18K
R72 1K
4.8V
R73 270
C71 Z-.01
Q53 2SC2058S-N.P
IC51 M5144P
T51 6MHZ/5.5MHZ
SOUND PRE AMP
DET
AMP & LIMITER
ELE-ATT DE-EMP
3.9V
3.9V
(0V) 8.6V
R78 5.6K
TP51
C78 50V 10μ
1.5V
1.3V
12.2V
1.6V
9.3V
C73 Z-.01
R75 1.2K
R85 15K
C75 Z-.01
R76 2.7K
C77 50V .33μ
Q54 2SA933S-R.S
L54 J-10μH
R74 1K
C72 J-100 SL
C74 16V 33μ
R77 680
C76 Z-.01
D52 HZ7B3
R79 5.6K
8.7V
7.1V
TP52
R83 10K
(0V) 12.2V
R82 4.7K
PAL-I-L
R80 1K
R81 10K
Q55 2SC2058S-N.P

TU01 TERMINAL

TERMINAL	HS-M16							HS-MX2		MX1
	(Y)	(E)	(S)/(P) (Q)	(IR)	(G)	(T)/(M)	(B)	(A)	(NZ)	(MKII)
BY	×	○	×	×	×	×	×	×	×	×
BL	○	○	○	○	○	○	×	○	○	○
AFC	○	×	○	○	○	○	○	○	○	○
BH	○	○	○	○	○	○	×	○	○	○
BU	○	○	○	○	○	○	×	○	○	○

⚠PCB-TIMER


1
2
3
4
5
6
7
8
A
B
C
D
E
V8A0
FIP9FM11
Z8A0
HC-479M
D8Z2
MZ309B2
/HZ9B24/ZPD9V1/ZPD9.1
Q8A5
Q8A2
Q8A1
Q8A0
IC8A1
CAT35C102P
/S-2904R
/S-2924AR10
IC8A0
HS-M16(E)/(S) UPD75217GF-608-3BE
HS-M16(Y) UPD75216AGF-670-3BE
HS-M16(B)/(IR)/(P)/(T)/(M)/(Q) UPD75216AGF-669-3BE
HS-MX2(A)/(NZ)
HS-MX1(MKII) UPD75217GF-607-3BE
IC8A2
UPC574J-K,L
Q8A8
2SC1740S-E
Q8A9
2SC1740S-E
CLK
SA/CG-DATA
SB
V-SYNCL
Q-STP
CTL
O-SB
MESECAM
EXT
MUTE
AC-1
AC-2
-30V
GND
TU-V
BS-2
BS-1
SDA
SCL
PCB-MAIN(MC) MK
S8A3 CH-UP
S8B3 CH-DN
S8A5 PB
S8B6 REC
S8B5 FF
S8B7 STOP
S8C7 STILL/PAUSE
S8A8 POWER
S8B8 EJECT
S8C8 REW
S805 ONE KEY PROGRAM
M10
NAT1
NAT2
NAT3
JOG
U-ONLY
H-BAND
LP
P40
P41
P42
P43
H-SYNC
CG-CLK
CG-CS
SW-5
RESET
COMP-SYNC
V-SYNC
STBY-5
+30V
TF
PCB-MAIN(MC) MF


(AUDIO)⚠
(−0.6V)
−0.1V
R332
15K
(10.9V
−0.1V
Q310
2SC3331
-S. T. U
C331
MN-.01

MODELS / SYMBOL No.	HS-M16								HS-MX2	HS-MX1
	(Y)	(B)	(G)	(IR)	(E)	(T),(M)	(S)	(P),(Q)	(A),(NZ)	(MKII)
D8J1	○	×	×	×	×	×	×	○	×	×
D8J2	×	×	×	×	×	○	×	×	○	×
D8J3	×	×	○	×	○	×	○	×	×	×
D8J4	×	○	×	×	×	×	×	×	×	×
D8J5	×	×	×	×	○	×	×	×	×	×
D8J6	×	×	×	×	×	×	×	×	×	×
D8J7	×	×	○	×	○	×	○	×	×	×
A AREA	○	○	×	○	○	×	○	×	×	×

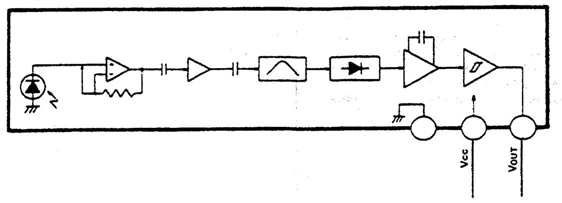
○ : Employed
× : Not employed

All diodes are 1SS252/1N4531 unless otherwise specified.

All PNP transistors are 2SA1309A-R. S/2SA933S-R. S/JA101-P. Q unless otherwise specified.

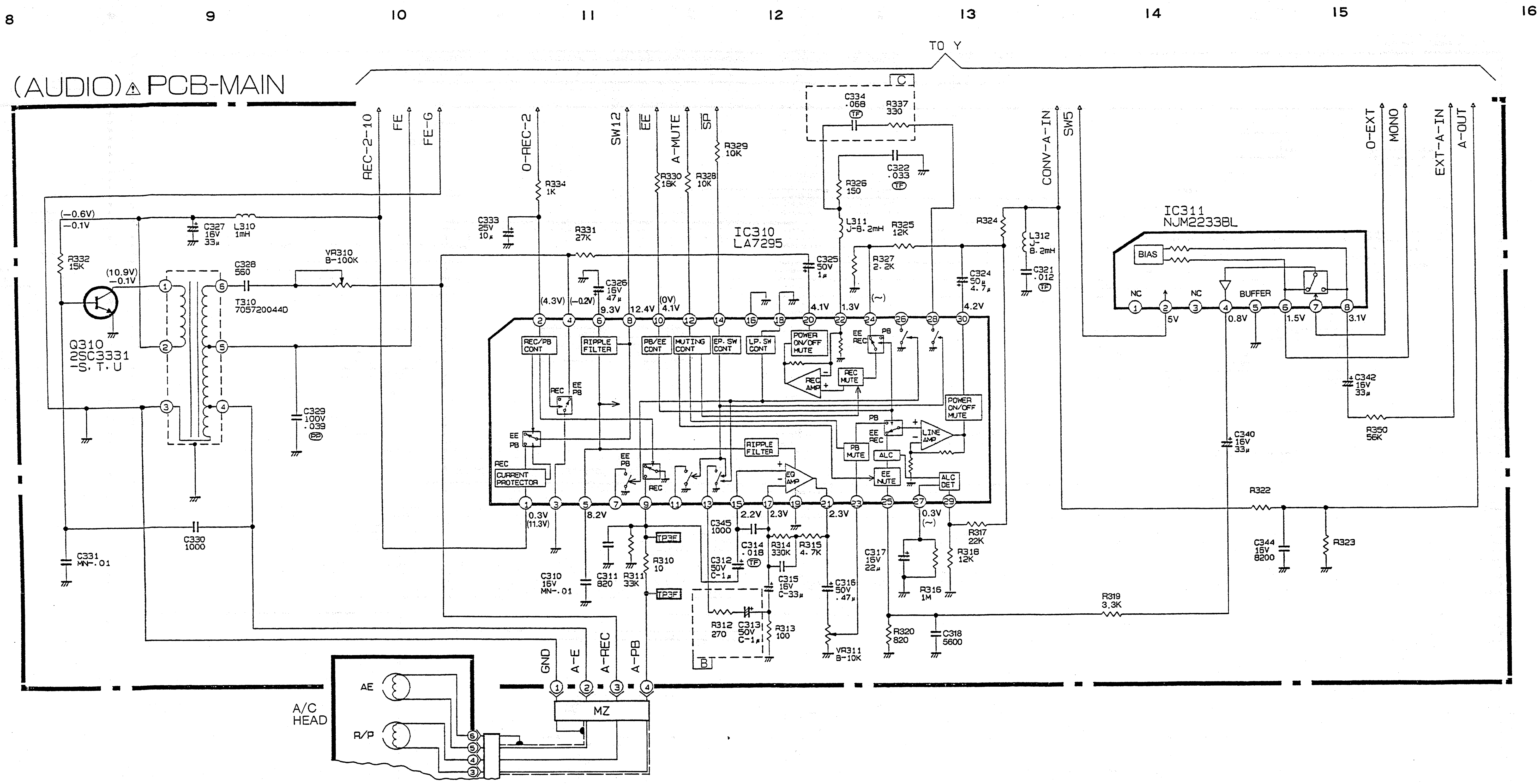
All NPN transistors are 2SC3311A-R. S/2SC1740S-R. S/JC501-P. Q unless otherwise specified.

Z8A0
PREAMP-REMOTE CONTROL



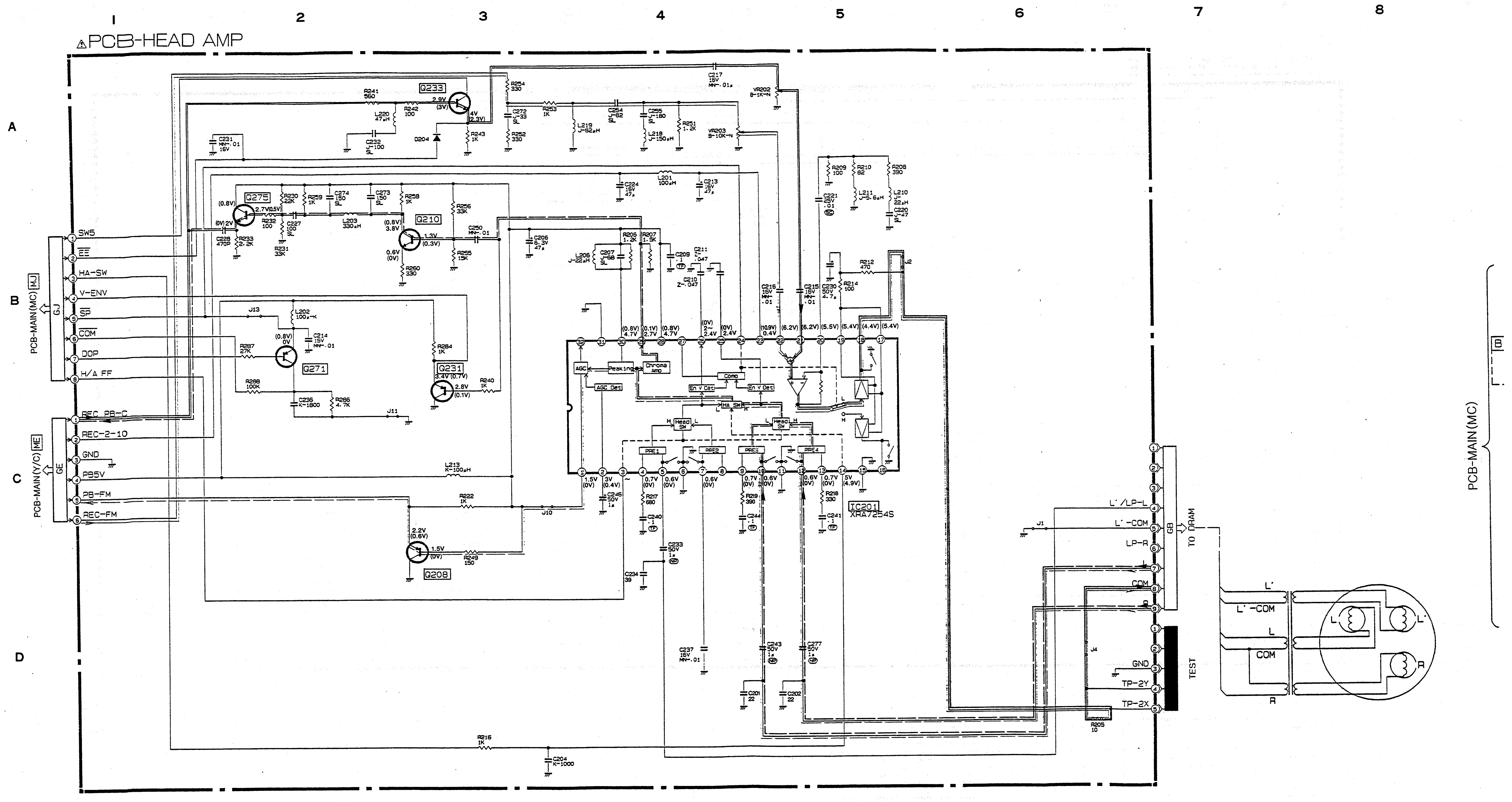
○ : Employe
× : Not em

MODELS / SYMBOL No.	
	(Y),(E),(
C345	
R329	
B AREA	
C AREA	
R322	
R323	
R324	


8
9
10
11
12
13
14
15
16
(AUDIO) ⚠ PCB-MAIN
TO Y
REC-2-10
FE
FE-G
O-REC-2
SW12
EE
A-MUTE
SP
CONV-A-IN
SW5
O-EXT
MONO
EXT-A-IN
A-OUT
C
C334 .068 TF
R337 330
C322 .033 TF
R326 150
L311 J-8.2mH
R325 12K
R327 2.2K
C325 50V 1μ
C324 50V 4.7μ
R324
L312 J-8.2mH
C321 .012 TF
IC311 NJM2233BL
BIAS
NC
BUFFER
5V
0.8V
1.5V
3.1V
C342 16V 33μ
R350 56K
C340 16V 33μ
R322
C344 16V 8200
R323
R319 3.3K
R329 10K
R330 18K
R328 10K
R334 1K
C333 25V 10μ
R331 27K
C326 16V 47μ
IC310 LA7295
(4.3V)
(-0.2V)
9.3V
12.4V
(0V) 4.1V
4.1V
1.3V
(~)
4.2V
REC/PB CONT
RIPPLE FILTER
PB/EE CONT
MUTING CONT
EP. SW CONT
LP. SW CONT
POWER ON/OFF MUTE
EE REC
PB
REC AMP
REC MUTE
REC EE PB
EE PB
REC
CURRENT PROTECTOR
EE PB
REC
RIPPLE FILTER
EQ AMP
PB MUTE
EE REC
ALC
LINE AMP
EE MUTE
ALC DET
POWER ON/OFF MUTE
0.3V (11.3V)
8.2V
2.2V
2.3V
2.3V
0.3V (~)
C345 1000
C314 .018 TF
R314 330K
R315 4.7K
C312 50V C-1μ
C315 16V C-33μ
C316 50V .47μ
C317 16V 22μ
R316 1M
R317 22K
R318 12K
R320 820
C318 5600
VR311 B-10K
R312 270
C313 50V C-1μ
R313 100
B
TP3E
TP3F
R310 10
C310 16V MN-.01
C311 820
R311 33K
(-0.6V) -0.1V
C327 16V 33μ
L310 1mH
R332 15K
(10.9V) -0.1V
C328 560
VR310 B-100K
T310 705720044D
Q310 2SC3331 -S, T, U
C329 100V .039 PP
C330 1000
C331 MN-.01
GND
A-E
A-REC
A-PB
MZ
AE
R/P
A/C HEAD

○ : Employed
× : Not employed

MODELS / SYMBOL No.	HS-M16			HS-MX2	HS-MX1
	(Y),(E),(S),(P),(T),(Q),(M)	(B), (IR)	(G)	(A),(NZ)	(MK II)
C345	×	×	○	×	×
R329	×	×	×	×	×
B AREA	×	×	×	×	×
C AREA	×	×	×	×	×
R322	1K	270	1K	1K	1K
R323	3.9K	4.7K	3.9K	3.9K	3.9K
R324	680	1K	680	680	680

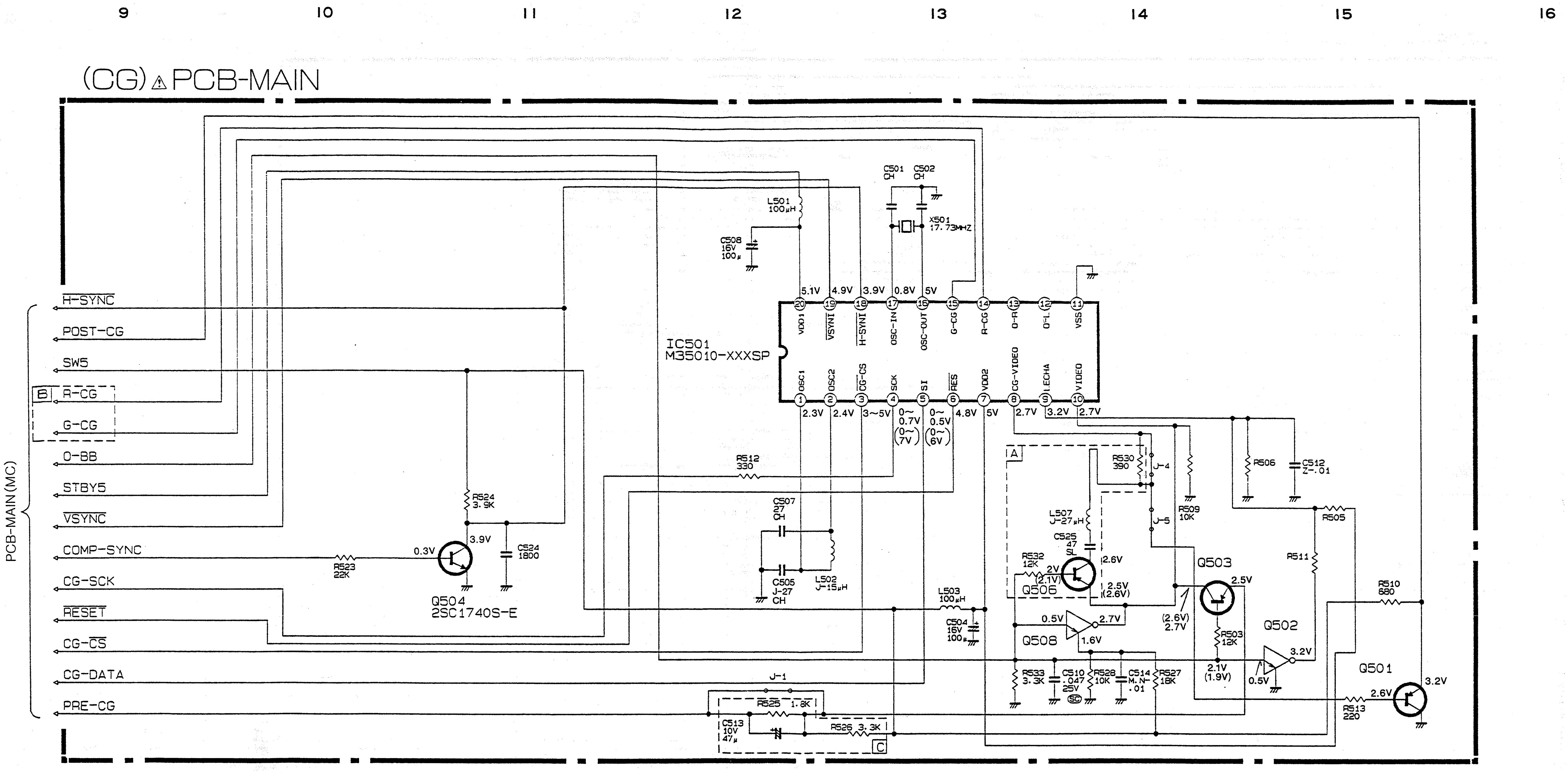

⚠PCB-HEAD AMP
1
2
3
4
5
6
7
8
A
B
C
D
E
PCB-MAIN(MC) MJ
GJ
SW5
EE
HA-SW
V-ENV
SP
COM
DOP
H/A FF
PCB-MAIN(Y/C) ME
GE
REC PB-C
REC-2-10
GND
PB5V
PB-FM
REC-FM
Q233
Q275
Q210
Q271
Q231
Q208
D204
IC201
XRA7254S
AGC
Peaking
Chroma AMP
AGC Det
Comp
En V Det
HA SW
Head SW
PRE1
PRE2
PRE3
PRE4
VR202
VR203
L213 K-100μH
R222 1K
R249 150
R216 1K
C204 K-1000
C237 16V MN-.01
C201 22
C202 22
C243 50V 1μ
C277 50V 1μ
R205 10
J1
J4
J10
J11
J13
L'/LP-L
L'-COM
LP-R
GB
TO DRAM
TEST
TP-2Y
TP-2X
L'
L' -COM
L
COM
R
PCB-MAIN(MC)
B

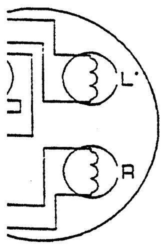
All NPN transistors are 2SC2058S-N.P unless otherwise specified.

All PNP transistors are 2SA933S-R.S/2SA1309A-R.S unless otherwise specified.

All diodes are 1SS252 unless otherwise specified.

(CG) ⚠ PCB-MAIN

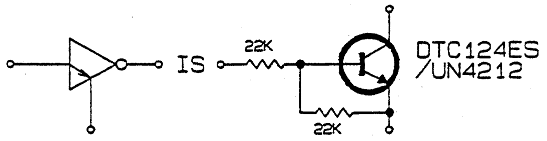

8
9
10
11
12
13
14
15
16
PCB-MAIN(MC)
H-SYNC
POST-CG
SW5
B
R-CG
G-CG
O-BB
STBY5
VSYNC
COMP-SYNC
CG-SCK
RESET
CG-CS
CG-DATA
PRE-CG
R524
3.9K
C524
1800
3.9V
0.3V
R523
22K
Q504
2SC1740S-E
IC501
M35010-XXXSP
L501
100μH
C508
16V
100μ
C501
CH
C502
CH
X501
17.73MHZ
5.1V
4.9V
3.9V
0.8V
5V
20 VDD1
19 VSYNI
18 H-SYNI
17 OSC-IN
16 OSC-OUT
15 G-CG
14 R-CG
13 O-R
12 O-L
11 VSS
1 OSC1
2 OSC2
3 CG-CS
4 SCK
5 SI
6 RES
7 VDD2
8 CG-VIDEO
9 LECHA
10 VIDEO
2.3V
2.4V
3~5V
0~
0.7V
(0~
7V)
0~
0.5V
(0~
6V)
4.8V
5V
2.7V
3.2V
2.7V
R512
330
C507
27
CH
C505
J-27
CH
L502
J-15μH
L503
100μH
C504
16V
100μ
J-1
R525 1.8K
C513
10V
47μ
R526 3.3K
C
A
R530
390
J-4
J-5
L507
J-27μH
C525
47
SL
R532
12K
2V
(2.1V)
2.6V
2.5V
(2.6V)
Q506
0.5V
2.7V
Q508
1.6V
R509
10K
R506
C512
Z-.01
R505
R511
Q503
2.5V
(2.6V)
2.7V
R503
12K
2.1V
(1.9V)
Q502
3.2V
0.5V
R510
680
Q501
3.2V
2.6V
R513
220
R533
3.3K
C510
.047
25V
SC
R528
10K
C514
M.N-
.01
R527
18K

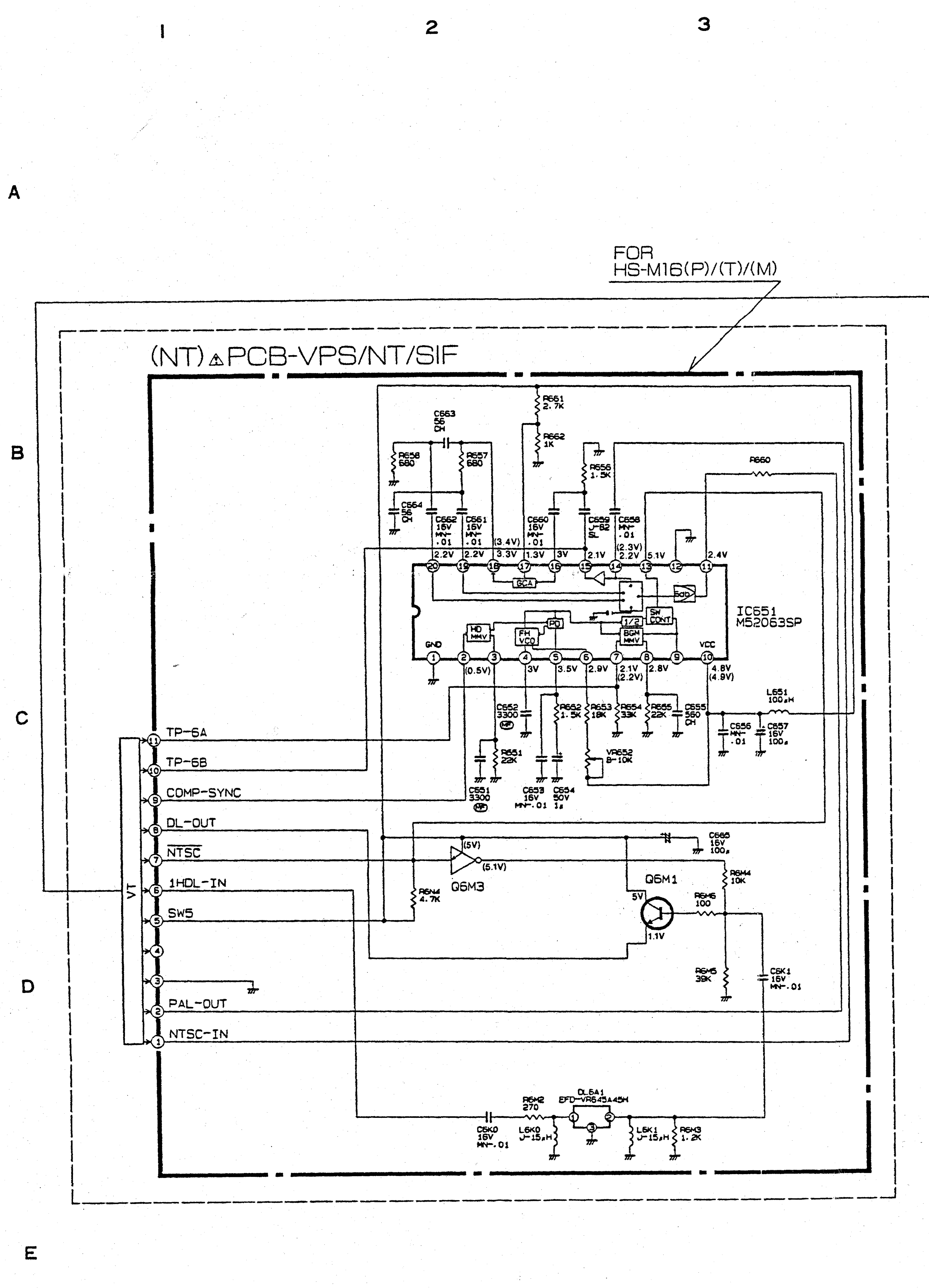


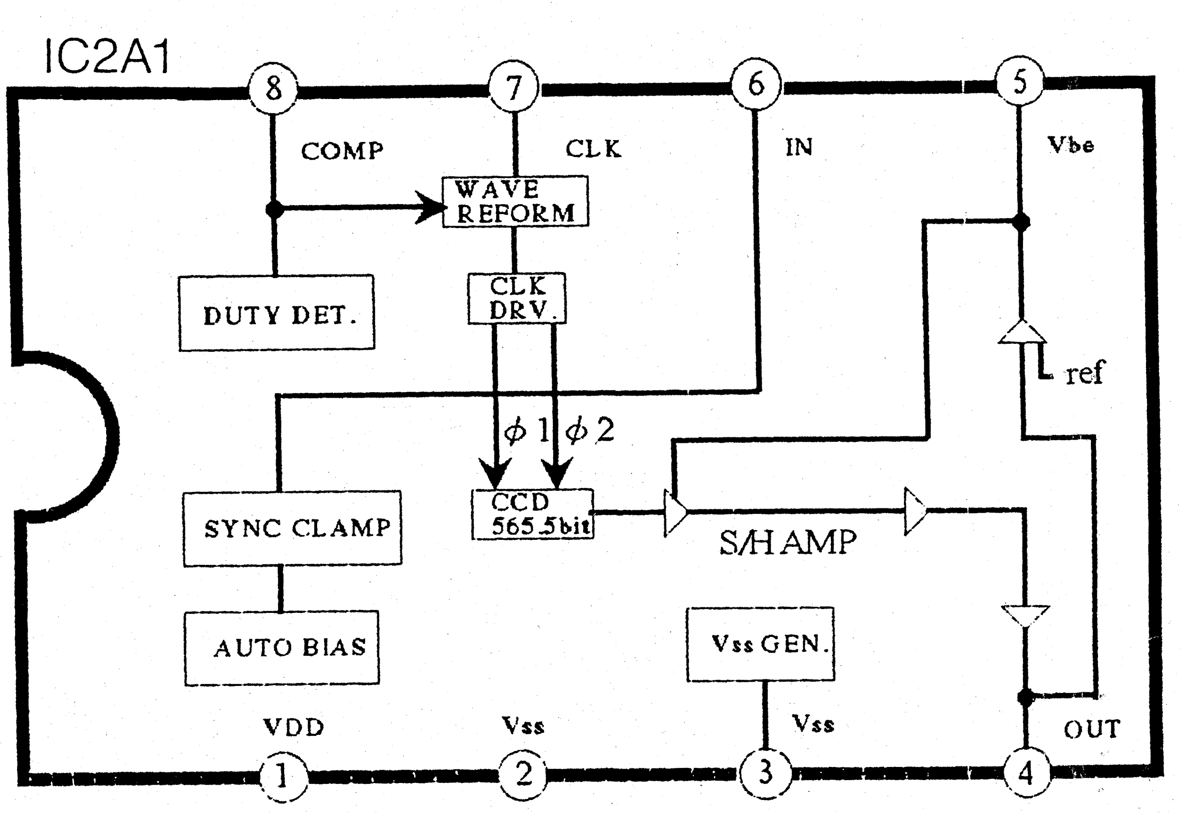
(CG) ○:Employed ×:Not employed

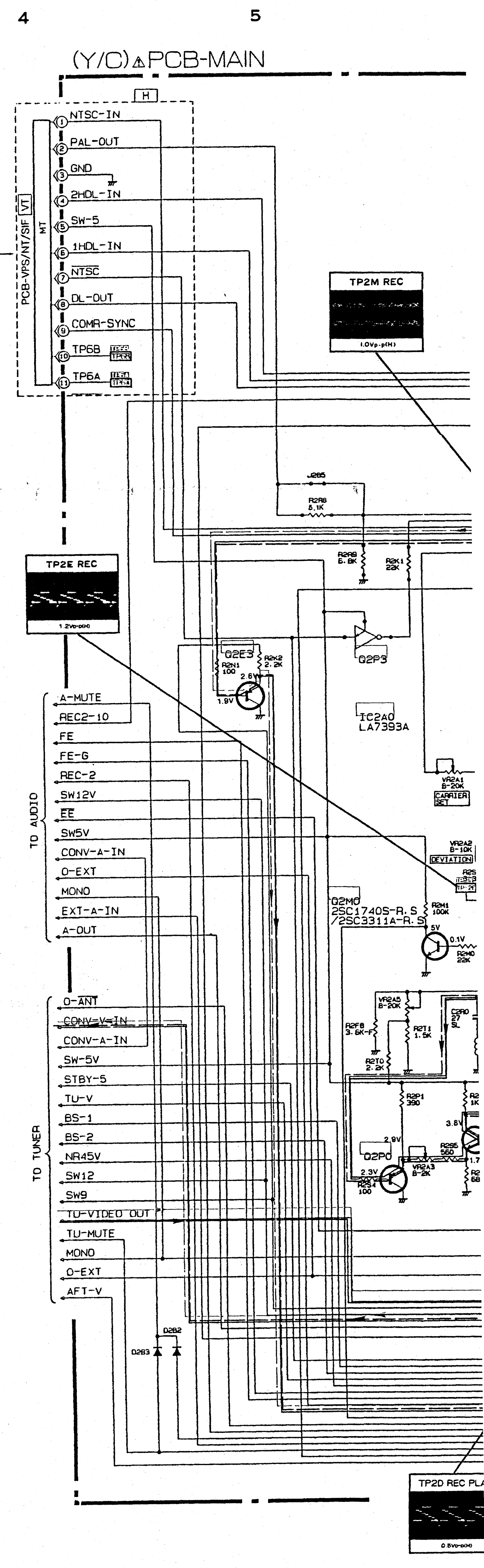
MODELS / SYMBOL No.	A AREA	B AREA	C AREA	J-1	J-4	C512	IC501	R505	R506	R511
HS-M16(Y)/(E)/(S)/(P)/(M)/(Q)	○	×	×	○	×	○	051SP	680	1.2K	22K
HS-M16(B)/(IR)/(T)	×	×	×	○	○	×	051SP	680	1.2K	22K
HS-MX2(A)/(NZ)	×	×	×	○	○	×	051SP	680	1.2K	22K
HS-M16(G)	○	×	×	○	×	○	051SP	680	1.2K	22K
HS-MX1(MKII)	○	×	×	○	×	○	052SP	680	1.2K	22K

All NPN transistors are 2SC3311A-R.S/2SC1740S-R.S/JC501-P.Q unless otherwise specified.
All PNP transistors are 2SA1309A-R.S/2SA933S-R.S/JA101-P.Q unless otherwise specified.

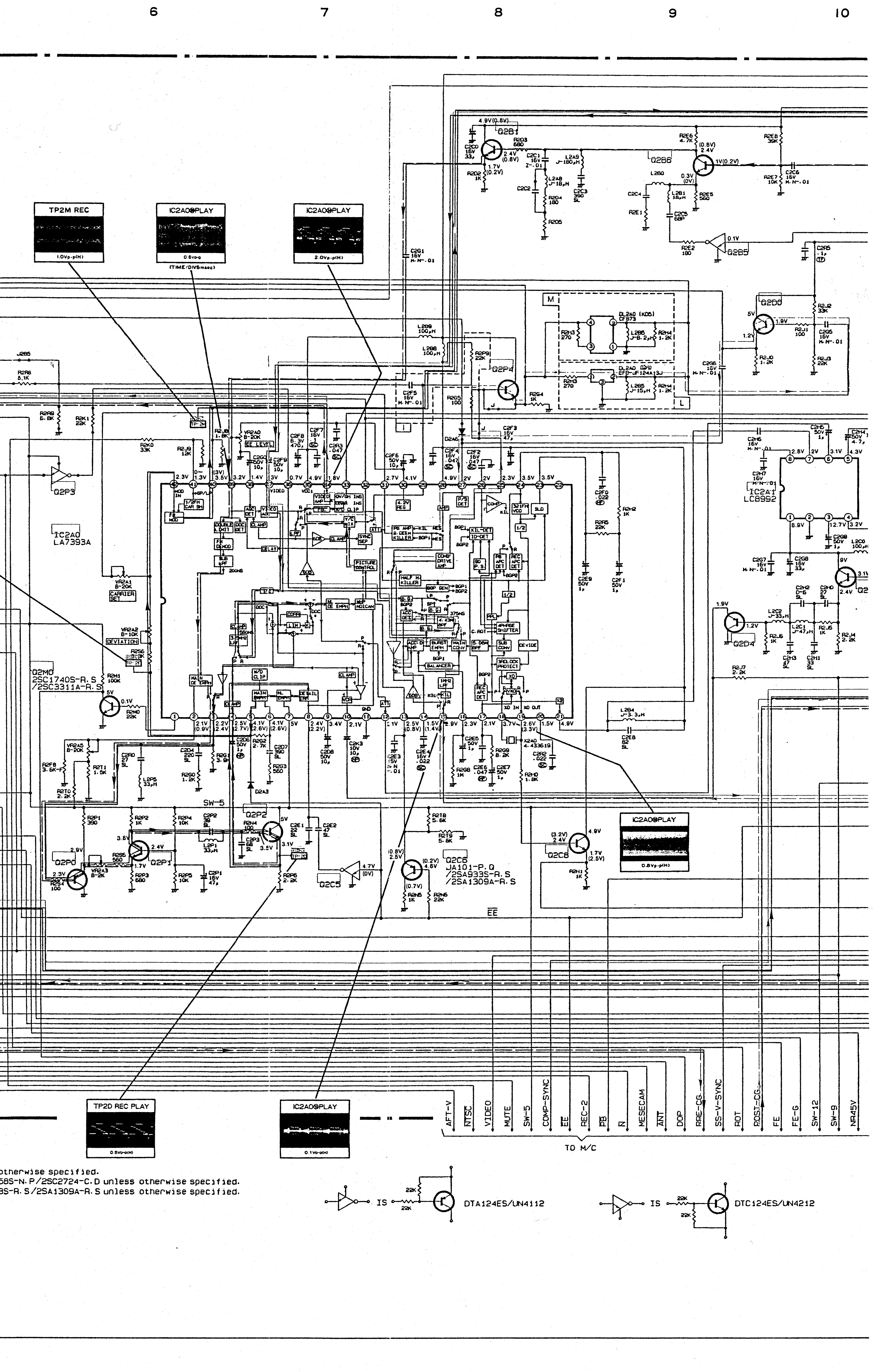

IS
22K
22K
DTC124ES
/UN4212


1
2
3
A
B
C
D
E
FOR
HS-M16(P)/(T)/(M)
(NT)⚠PCB-VPS/NT/SIF
IC651
M52063SP
GND
VCC
GCA
HD MMV
FH VCO
PD
1/2
SW CONT
BGM MMV
5db
R661 2.7K
R662 1K
C663 56 CH
R658 680
R657 680
C664 56 CH
C662 16V MN-.01
C661 16V MN-.01
C660 16V MN-.01
C659 J-82 SL
C658 MN-.01
R656 1.5K
R660
2.2V
2.2V
(3.4V) 3.3V
1.3V
3V
2.1V
(2.3V) 2.2V
5.1V
2.4V
(0.5V)
3V
3.5V
2.9V
2.1V (2.2V)
2.8V
4.8V (4.9V)
C652 3300 MF
R651 22K
C651 3300 MF
C653 16V MN-.01
C654 50V 1μ
R652 1.5K
R653 18K
R654 33K
R655 22K
C655 560 CH
VR652 B-10K
C656 MN-.01
C657 16V 100μ
L651 100μH
VT
TP-6A
TP-6B
COMP-SYNC
DL-OUT
NTSC
1HDL-IN
SW5
PAL-OUT
NTSC-IN
Q6M3
(5V)
(5.1V)
R6N4 4.7K
Q6M1
5V
1.1V
C665 16V 100μ
R6M4 10K
R6M6 100
R6M5 39K
C6K1 16V MN-.01
C6K0 16V MN-.01
R6M2 270
DL6A1 EFD-VR645A45H
L6K0 J-15μH
L6K1 J-15μH
R6M3 1.2K

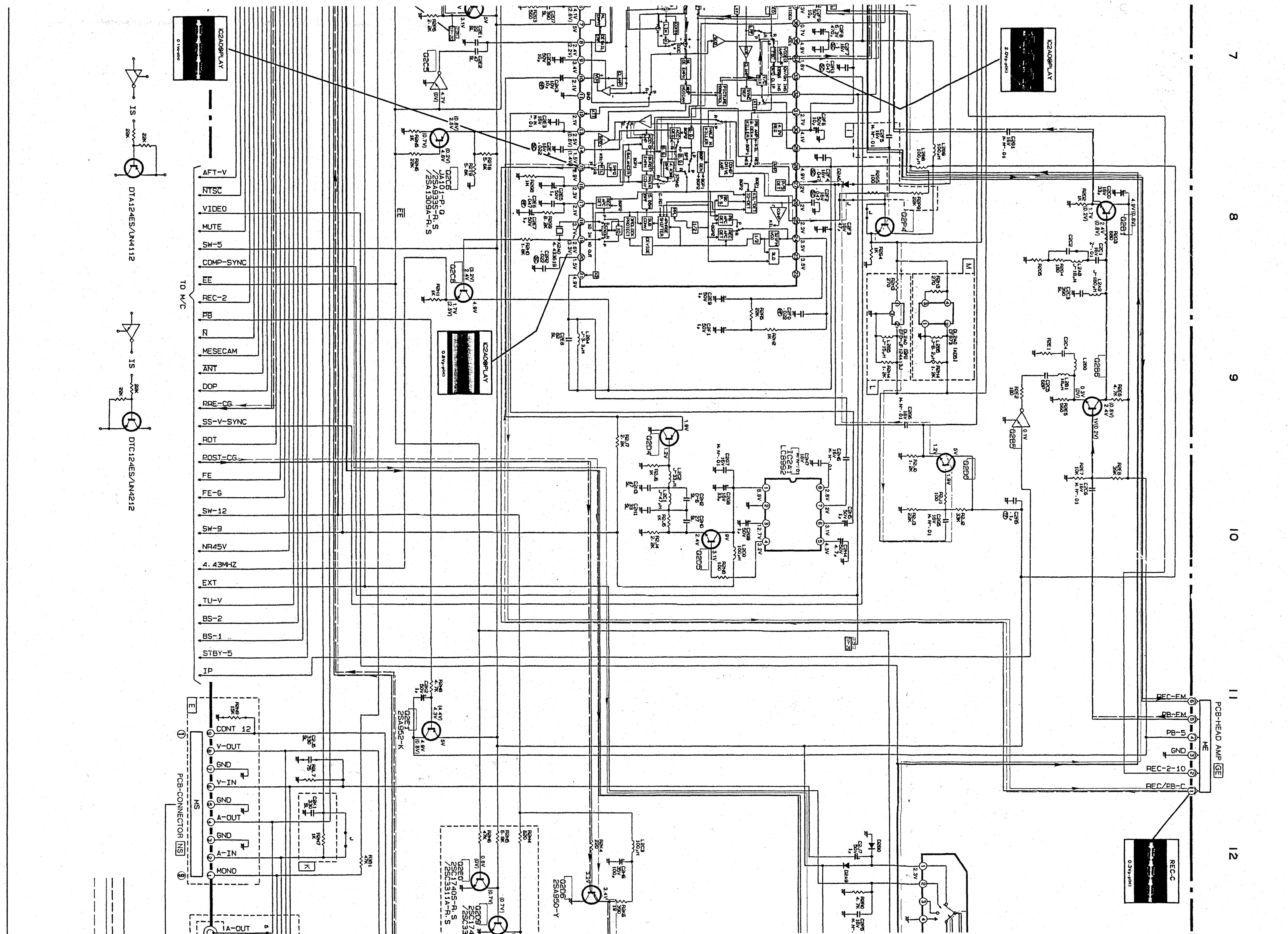

IC2A1
COMP
CLK
IN
Vbe
WAVE REFORM
CLK DRV.
DUTY DET.
ϕ1
ϕ2
CCD 565.5bit
S/H AMP
ref
SYNC CLAMP
AUTO BIAS
Vss GEN.
VDD
Vss
Vss
OUT
1
2
3
4
5
6
7
8
F
G
H

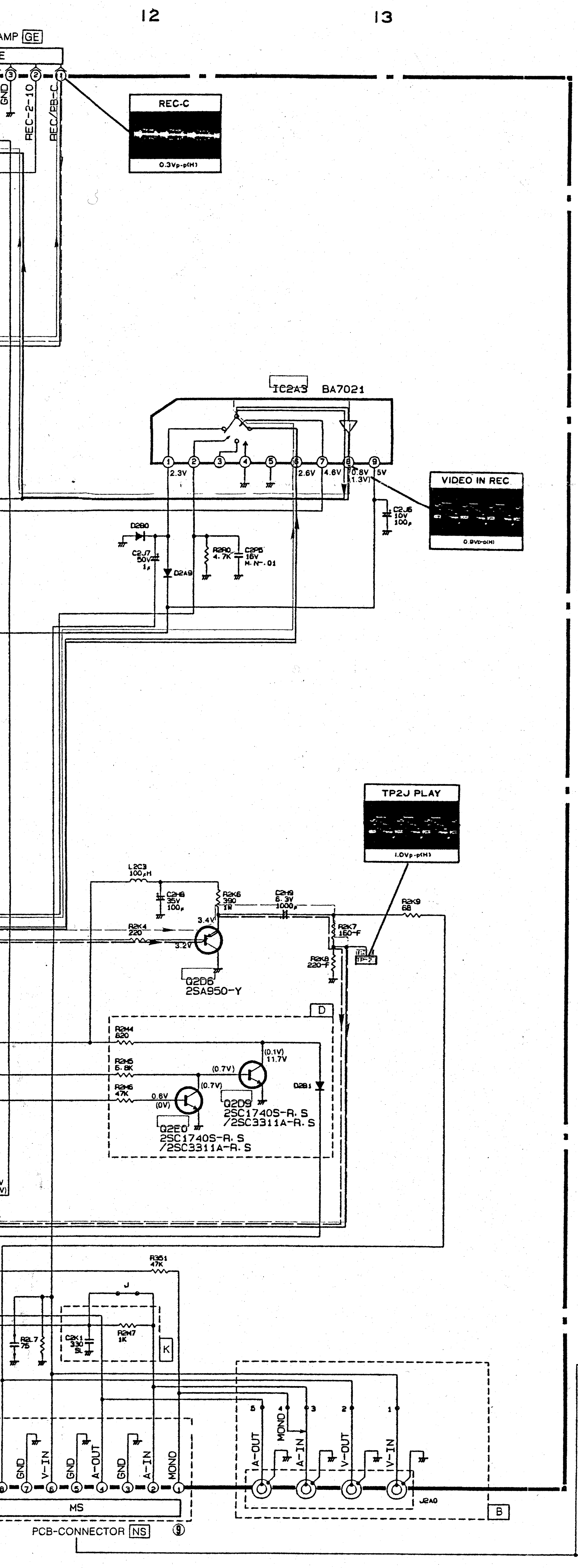

4
5
(Y/C)⚠PCB-MAIN
H
PCB-VPS/NT/SIF VT
MT
NTSC-IN
PAL-OUT
GND
2HDL-IN
SW-5
1HDL-IN
NTSC
DL-OUT
COMR-SYNC
TP6B
TP6A
TP2M REC
1.0Vp-p(H)
J285
R2R8 5.1K
R2R9 6.8K
R2K1 22K
TP2E REC
1.2Vp-p(H)
Q2E3
R2N1 100
R2K2 2.2K
2.6V
1.9V
Q2P3
IC2A0
LA7393A
VR2A1 B-20K
CARRIER SET
VR2A2 B-10K
DEVIATION
TP-2F
Q2M0
2SC1740S-R.S
/2SC3311A-R.S
R2M1 100K
5V
0.1V
R2M0 22K
TO AUDIO
A-MUTE
REC2-10
FE
FE-G
REC-2
SW12V
EE
SW5V
CONV-A-IN
O-EXT
MONO
EXT-A-IN
A-OUT
TO TUNER
O-ANT
CONV-V-IN
CONV-A-IN
SW-5V
STBY-5
TU-V
BS-1
BS-2
NR45V
SW12
SW9
TU-VIDEO OUT
TU-MUTE
MONO
O-EXT
AFT-V
VR2A5 B-20K
R2F8 3.6K-F
R2T1 1.5K
R2T0 2.2K
C2R0 27 SL
R2P1 390
2.9V
Q2P0
2.3V
R2S4 100
VR2A3 B-2K
R2S5 560
3.8V
D2B3
D2B2
TP2D REC PL
0.5Vp-p(H)

All diodes are 1SS252 unless otherwise specified.
All NPN transistors are 2SC2058S-N.P/2SC2724-C.D unless
All PNP transistors are 2SA933S-R.S/2SA1309A-R.S unless


6
7
8
9
10
TP2M REC
1.0Vp-p(H)
IC2A0⑩PLAY
0.6Vp-p
(TIME/DIV5msec)
IC2A0⑰PLAY
2.0Vp-p(H)
IC2A0
LA7393A
IC2A1
LC8992
Q2M0
2SC1740S-R.S
/2SC3311A-R.S
Q2C6
JA101-P.Q
/2SA933S-R.S
/2SA1309A-R.S
Q2B1
Q2B5
Q2B6
Q2D0
Q2D4
Q2P0
Q2P1
Q2P2
Q2P3
Q2P4
Q2C5
Q2C8
DL2A0 (KD5)
CF873
DL2A0 (31)
EFD-JF124A13J
X2A0
4.433619
IC2A0⑳PLAY
0.8Vp-p(H)
TP2D REC PLAY
0.5Vp-p(H)
IC2A0⑮PLAY
0.1Vp-p(H)
SW-5
EE
AFT-V
NTSC
VIDEO
MUTE
SW-5
COMP-SYNC
EE
REC-2
PB
N
MESECAM
ANT
DOP
PRE-CG.
SS-V-SYNC
ROT
POST-CG.
FE
FE-G
SW-12
SW-9
NR45V
TO M/C
IS
DTA124ES/UN4112
DTC124ES/UN4212
22K

otherwise specified.
58S-N.P/2SC2724-C.D unless otherwise specified.
3S-R.S/2SA1309A-R.S unless otherwise specified.


7
8
9
10
11
12
AFT-V
NTSC
VIDEO
MUTE
SW-5
COMP-SYNC
EE
REC-2
PB
N
MESECAM
ANT
DOP
PRE-CG
SS-V-SYNC
ROT
POST-CG
FE
FE-G
SW-12
SW-9
NR45V
4.43MHZ
EXT
TU-V
BS-2
BS-1
STBY-5
IP
TO M/C
IS
DTA124ES/UN4112
DTC124ES/UN4212
IC2A09PLAY
IC2A09PLAY
IC2A09PLAY
REC-C
Q2C6
2SA1309A-R.S
Q2C5
Q2C8
Q2D4
Q2D5
Q2D6
2SA950-Y
Q2E1
2SA952-K
Q2P4
Q2B1
Q2B6
Q2B5
Q2D0
IC2A1
LC8992
CONT 12
V-OUT
GND
V-IN
GND
A-OUT
GND
A-IN
MONO
A-OUT
MS
PCB-CONNECTOR NS
E
K
M
L
REC-FM
PB-FM
PB-5
GND
REC-2-10
REC/PB-C
ME
PCB-HEAD AMP GE


12
13
AMP GE
GND
REC-2-10
REC/EB-C
REC-C
0.3Vp-p(H)
IC2A3 BA7021
2.3V
2.6V
4.6V
0.8V
1.3V
5V
VIDEO IN REC
0.9Vp-p(H)
D2B0
C2J7 50V 1μ
D2A9
R2R0 4.7K
C2P5 16V
C2J6 10V 100μ
TP2J PLAY
1.0Vp-p(H)
L2C3 100μH
C2H8 35V 100μ
R2K6 390
C2H9 6.3V 1000μ
R2K9 68
R2K4 220
3.4V
3.2V
R2K7 150-F
R2K8 220-F
TP-2
Q2D6 2SA950-Y
D
R2H4 820
R2H5 6.8K
R2H6 47K
(0.1V) 11.7V
(0.7V)
0.6V (0V)
D2B1
Q2D9 2SC1740S-R.S /2SC3311A-R.S
Q2E0 2SC1740S-R.S /2SC3311A-R.S
R351 47K
J
R2L7 75
C2K1 330 SL
R2N7 1K
K
GND
V-IN
A-OUT
A-IN
MONO
MS
PCB-CONNECTOR NS
9
A-OUT
MONO
A-IN
V-OUT
V-IN
5
4
3
2
1
J2A0
B

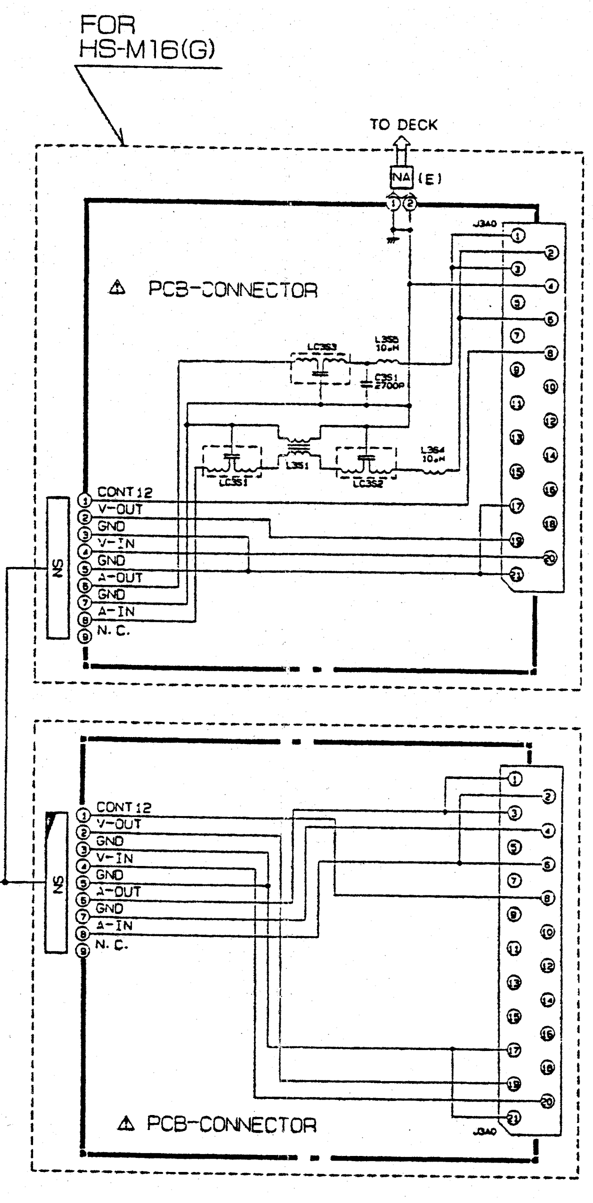
Recording of Luminance Signal
Playback of Luminance Signal
Recording of Color Signal
Playback of Color Signal

14
15
16

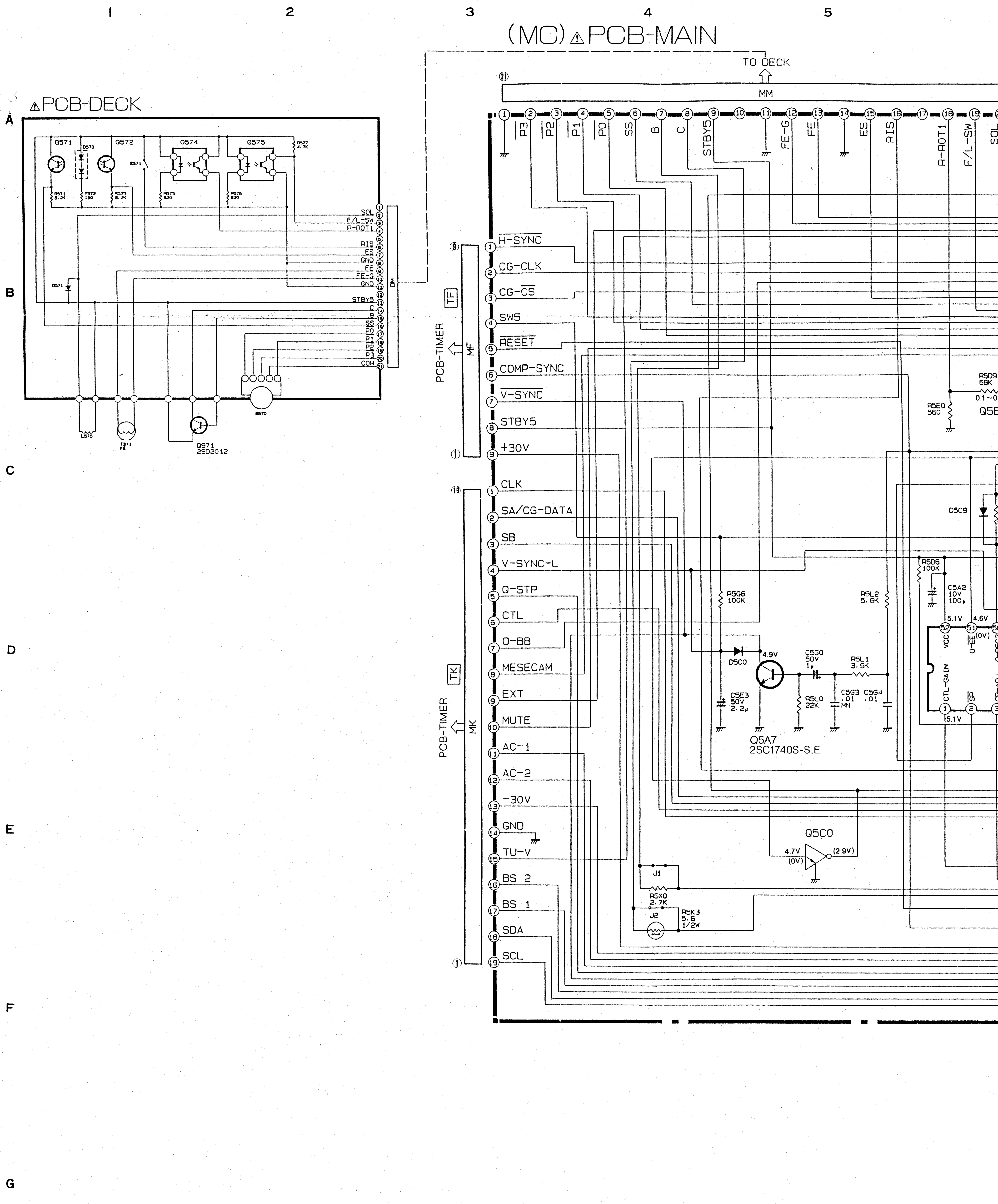
(Y/C) ○:Employed ×:Not employed

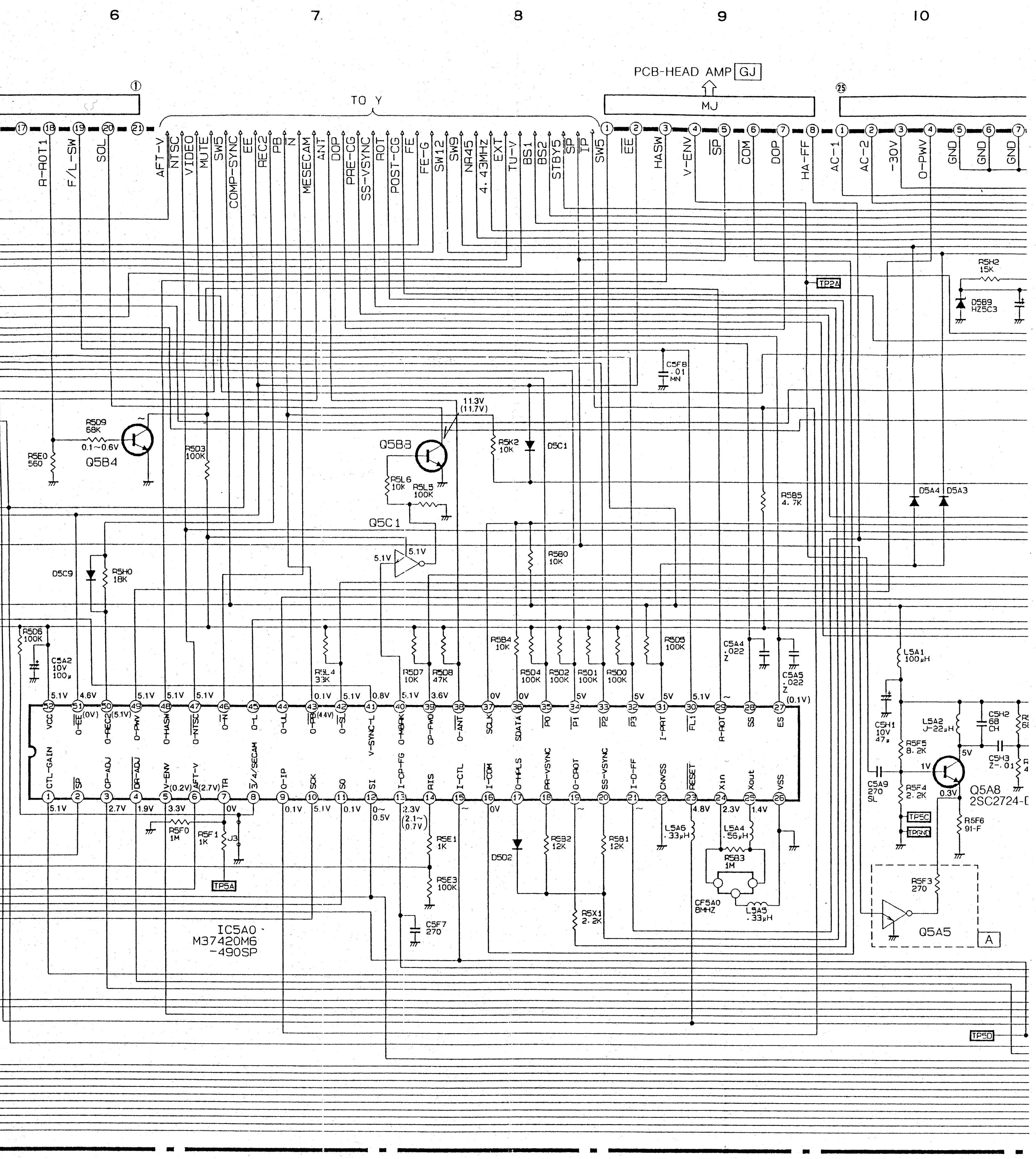
SYMBOL No. \ MODELS	HS-M16					MX2	MX1
	(Y)/(E) (S)	(B)/(IR)	(G)	(P)/(Q)	(T)/(M)	(A)/(NZ)	(MKII)
B AREA	×	×	×	○	○	○	○
D AREA	○	○	○	×	×	×	×
E AREA	○	○	○	×	×	×	×
H AREA	×	×	×	○	×	×	○
I AREA	×	×	×	○	×	×	○
K AREA	○	○	○	×	×	×	×
L AREA	×	×	×	○	○	○	○
M AREA	○	○	○	×	×	×	×
N AREA	○	○	×	×	×	×	×
J1	○	○	○	×	×	×	×
J2	○	○	○	×	×	×	×
J3	○	○	○	×	×	×	×
J253	○	○	○	×	○	○	×
J652	○	○	○	×	○	○	×
C2C2	39SL	39SL	33SL	33SL	39SL	39SL	33SL
C2C4	180	180	470	180	180	180	180
D2A6	○	×	○	○	×	×	○
L2B0	68	68	33	68	68	68	68
Q2P3	×	×	×	○	×	×	○
Q2P4	×	×	×	○	×	×	○
R2D4	180	180	180	180	180	180	180
R2D5	1.2K	1.2K	1K	1.2K	1.2K	1.2K	1.2K
R2E1	1.2K	1.2K	1K	1.2K	1.2K	1.2K	1.2K
R2G4	×	×	×	○	×	×	○
R2G5	×	×	×	○	×	×	○
R2K1	×	×	×	○	×	×	○
R2R8	×	×	×	○	×	×	○
R2R9	×	×	×	○	×	×	○
R2N9	○	○	○	×	×	×	×
R351	×	×	×	×	×	×	×

FOR
HS-M16(G)


TO DECK
NA (E)
J3A0
⚠ PCB-CONNECTOR
LC353
L355 10μH
C351 2700P
LC351
L351
LC352
L354 10μH
NS
CONT12
V-OUT
GND
V-IN
GND
A-OUT
GND
A-IN
N.C.
⚠ PCB-CONNECTOR
J3A0

HS-M16(Y),(B),(E),(S),(IR) (3/5)

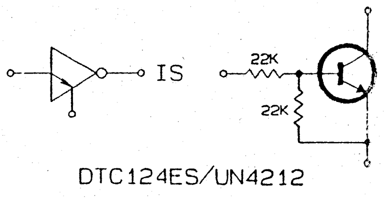

1
2
3
4
5
A
B
C
D
E
F
G
(MC) ⚠PCB-MAIN
TO DECK
MM
㉑
⚠PCB-DECK
Q571
D570
Q572
S571
Q574
Q575
R577 4.7K
R571 8.2K
R572 150
R573 8.2K
R575 820
R576 820
SOL ①
F/L-SW ②
R-ROT1 ③
④
RIS ⑤
ES ⑥
GND ⑦
FE ⑧
FE-G ⑨
GND ⑩
⑪
STBY5 ⑫
C ⑬
B ⑭
SS ⑮
P0 ⑯
P1 ⑰
P2 ⑱
P3 ⑲
COM ⑳
㉑
DM
D571
L570
T371 FE
Q971 2SD2012
S570
① P3
② P2
③ P1
④ P0
⑤ SS
⑥ B
⑦ C
⑧ STBY5
⑨
⑩
⑪ FE-G
⑫ FE
⑬
⑭ ES
⑮ RIS
⑯
⑰ R-ROT1
⑱ F/L-SW
⑲ SOL
⑨
TF
PCB-TIMER
MF
① H-SYNC
② CG-CLK
③ CG-CS
④ SW5
⑤ RESET
⑥ COMP-SYNC
⑦ V-SYNC
⑧ STBY5
⑨ +30V
①
⑲
TK
PCB-TIMER
MK
① CLK
② SA/CG-DATA
③ SB
④ V-SYNC-L
⑤ Q-STP
⑥ CTL
⑦ O-BB
⑧ MESECAM
⑨ EXT
⑩ MUTE
⑪ AC-1
⑫ AC-2
⑬ -30V
⑭ GND
⑮ TU-V
⑯ BS 2
⑰ BS 1
⑱ SDA
⑲ SCL
①
R5D9 68K
0.1~0
R5E0 560
Q5E
D5C9
R5D6 100K
C5A2 10V 100μ
5.1V
4.6V
52 VCC
51 O-EE (0V)
CTL-GAIN
SP
① 5.1V
②
R5G6 100K
R5L2 5.6K
D5C0
4.9V
C5G0 50V 1μ
R5L1 3.9K
C5E3 50V 2.2μ
R5L0 22K
C5G3 .01 MN
C5G4 .01
Q5A7
2SC1740S-S,E
Q5C0
4.7V (0V)
(2.9V)
J1
R5X0 2.7K
J2
R5K3 5.6 1/2W


6
7
8
9
10
PCB-HEAD AMP GJ
MJ
TO Y
①
㉕
⑰ ⑱ ⑲ ⑳ ㉑
R-ROT1
F/L-SW
SOL
AFT-V
NTSC
VIDEO
MUTE
SW5
COMP-SYNC
EE
REC2
PB
N
MESECAM
ANT
DOP
PRE-CG
SS-VSYNC
ROT
POST-CG
FE
FE-G
SW12
SW9
NA45
4.43MHZ
EXT
TU-V
BS1
BS2
STBY5
SP
IP
SW5
EE
HASW
V-ENV
SP
COM
DOP
HA-FF
AC-1
AC-2
-30V
O-PWV
GND
GND
GND
R5H2
15K
TP2A
D5B9
HZ5C3
C5F8
.01
MN
11.3V
(11.7V)
R5D9
68K
0.1~0.6V
R5E0
560
Q5B4
R5D3
100K
Q5B3
R5K2
10K
D5C1
R5L6
10K
R5L5
100K
Q5C1
5.1V
5.1V
R5B5
4.7K
D5A4
D5A3
D5C9
R5H0
18K
R580
10K
R5D6
100K
C5A2
10V
100μ
R5L4
33K
R5D7
10K
R5D8
47K
R5B4
10K
R5D4
100K
R5D2
100K
R5D1
100K
R5D0
100K
R5D5
100K
C5A4
.022
Z
C5A5
.022
Z
(0.1V)
L5A1
100μH
C5H1
10V
47μ
L5A2
22μH
C5H2
68
CH
R5F5
8.2K
C5H3
.01
5V
1V
0.3V
C5A9
270
SL
R5F4
2.2K
Q5A8
2SC2724-
TP5C
TPGND
R5F6
91-F
R5F3
270
Q5A5
A
VCC
O-EE
O-REC2
O-PWV
O-HASW
O-NTSC
O-N
O-L
O-LL
O-PB
O-SL
V-SYNC-L
O-MUTE
CP-PWO
O-ANT
SCLK
SDATA
PO
P1
P2
P3
I-PAT
FL1
A-ROT
SS
ES
CTL-GAIN
SP
CP-ADJ
DR-ADJ
V-ENV
AFT-V
TR
3/4/SECAM
O-IP
SCK
SO
SI
I-CP-FG
RTS
I-CTL
I-COM
O-HHLS
PA-VSYNC
O-CROT
SS-VSYNC
I-O-FF
CNVSS
RESET
Xin
Xout
VSS
5.1V
4.6V
(0V)
(5.1V)
5.1V
5.1V
5.1V
0.1V
(4.4V)
5.1V
0.8V
5.1V
3.6V
0V
0V
5V
5V
5V
5.1V
2.7V
1.9V
3.3V
(0.2V)
(2.7V)
0V
0.1V
5.1V
0.1V
0~0.5V
2.3V
(2.1~0.7V)
0V
4.8V
2.3V
1.4V
R5F0
1M
R5F1
1K
J3
TP5A
R5E1
1K
R5E3
100K
C5F7
270
D502
R5B2
12K
R5B1
12K
R5X1
2.2K
L5A6
.33μH
L5A4
56μH
R5B3
1M
CF5A0
8MHZ
L5A5
.33μH
IC5A0
M37420M6
-490SP
TP5D

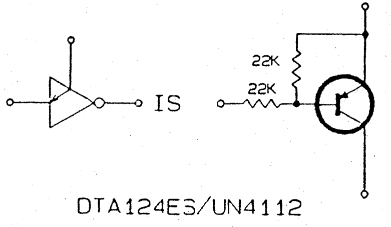
All diodes are 1SS252 unless otherwise specified

All NPN transistors are 2SC3311A-R.S/2SC1740S-R.S/JC501-P.Q unless otherwise specified

All PNP transistors are 2SA1309A-R.S/2SA933S-R.S /JA101-P.Q unless otherwise specified



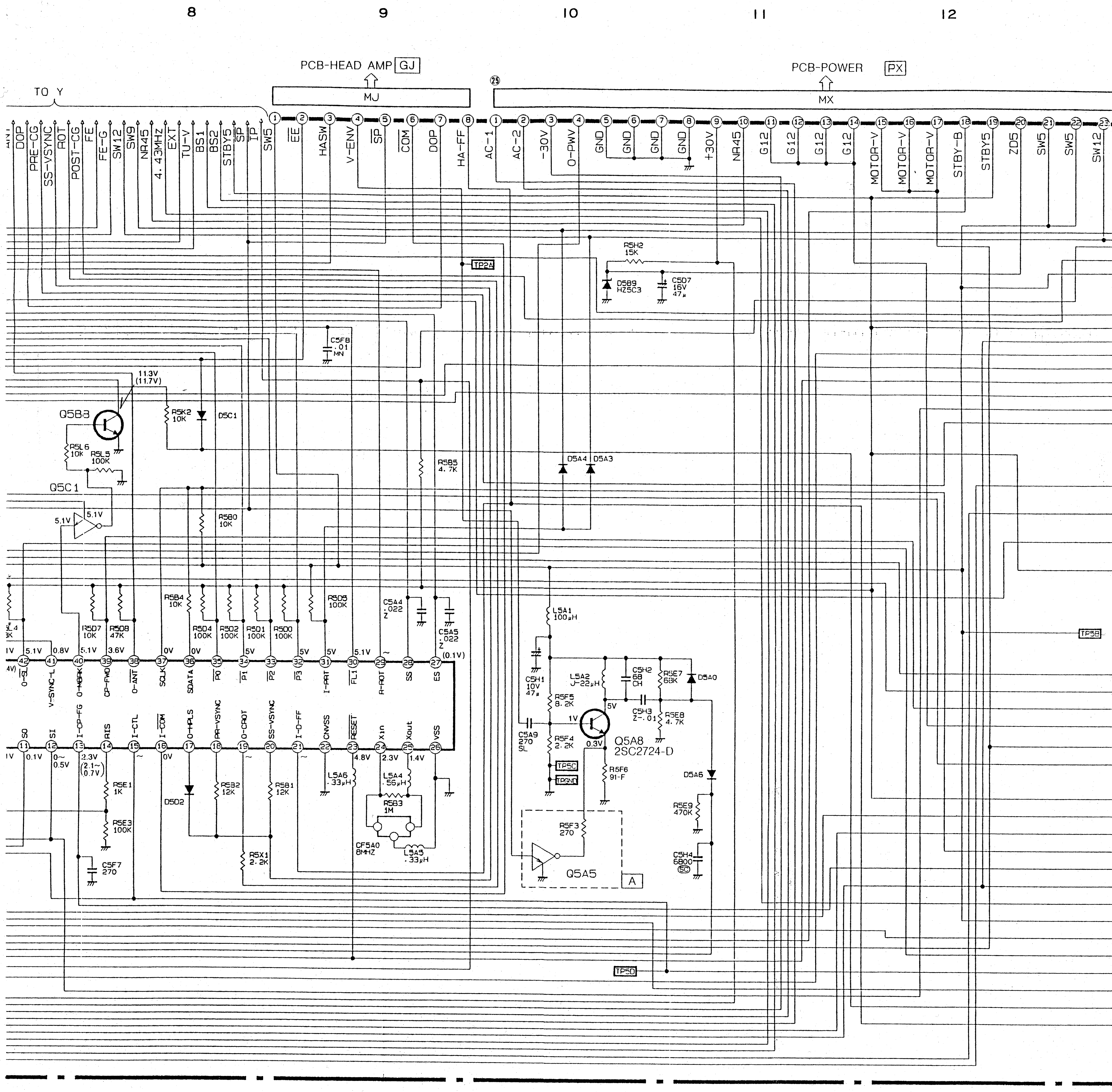
DTC124ES/UN4212



DTA124ES/UN4112

(MC) ○:Employe

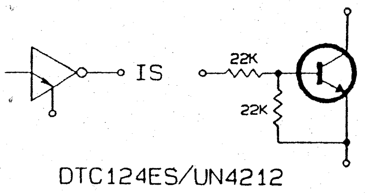
MODELS	SY
HS-M16(Y)/(E)/(S)/(I	
HS-M16(B)	
HS-M16(G)	
HS-M16(T)(M)	
HS-MX2(A)/(NZ)	
HS-MX1(MKII)	


8
9
10
11
12
PCB-HEAD AMP
GJ
MJ
PCB-POWER
PX
MX
TO Y
DOP
PRE-CG
SS-VSYNC
ROT
POST-CG
FE
FE-G
SW12
SW9
NA45
4.43MHz
EXT
TU-V
BS1
BS2
STBY5
SP
TP
SW5
EE
HASW
V-ENV
SP
COM
DOP
HA-FF
AC-1
AC-2
-30V
O-PWV
GND
GND
GND
GND
+30V
NA45
G12
G12
G12
G12
MOTOR-V
MOTOR-V
MOTOR-V
STBY-B
STBY5
ZD5
SW5
SW5
SW12
TP2A
R5H2 15K
D5B9 HZ5C3
C5D7 16V 47μ
C5F8 .01 MN
113V (11.7V)
Q5B3
R5K2 10K
D5C1
R5L6 10K
R5L5 100K
Q5C1
5.1V
5.1V
R5B5 4.7K
D5A4
D5A3
R580 10K
R5B4 10K
R5D5 100K
C5A4 .022 Z
C5A5 .022 Z
R5D7 10K
R508 47K
R5D4 100K
R502 100K
R501 100K
R500 100K
(0.1V)
O-SI
V-SYNC-L
O-MARK
CP-FWD
O-ANT
SCLK
SDATA
P0
P1
P2
P3
I-PAT
FL1
A-ROT
SS
ES
SO
SI
I-CP-FG
RIS
I-CTL
I-COM
O-HPLS
PR-VSYNC
O-CROT
SS-VSYNC
I-O-FF
CNVSS
RESET
Xin
Xout
VSS
0.1V
0~0.5V
2.3V (2.1~0.7V)
0V
4.8V
2.3V
1.4V
R5E1 1K
R5E3 100K
C5F7 270
D5D2
R532 12K
R531 12K
R5X1 2.2K
L5A6 .33μH
L5A4 .56μH
R5B3 1M
CF5A0 8MHZ
L5A5 .33μH
L5A1 100μH
C5H1 10V 47μ
L5A2 J-22μH
C5H2 68 CH
R5E7 68K
D5A0
C5H3 Z-.01
R5E8 4.7K
R5F5 8.2K
5V
1V
0.3V
Q5A8 2SC2724-D
C5A9 270 SL
R5F4 2.2K
TP5C
TPGND
R5F6 91-F
D5A6
R5E9 470K
R5F3 270
Q5A5
A
C5H4 6800 5C
TP5B
TP5D

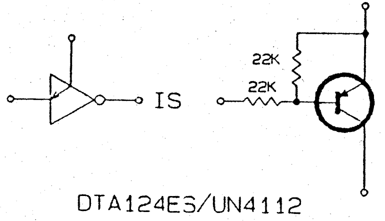
;252 unless otherwise specified

s are 2SC3311A-R.S/2SC1740S-R.S/JC501-P.Q unless
'ied

s are 2SA1309A-R.S/2SA933S-R.S /JA101-P.Q unless
'ied



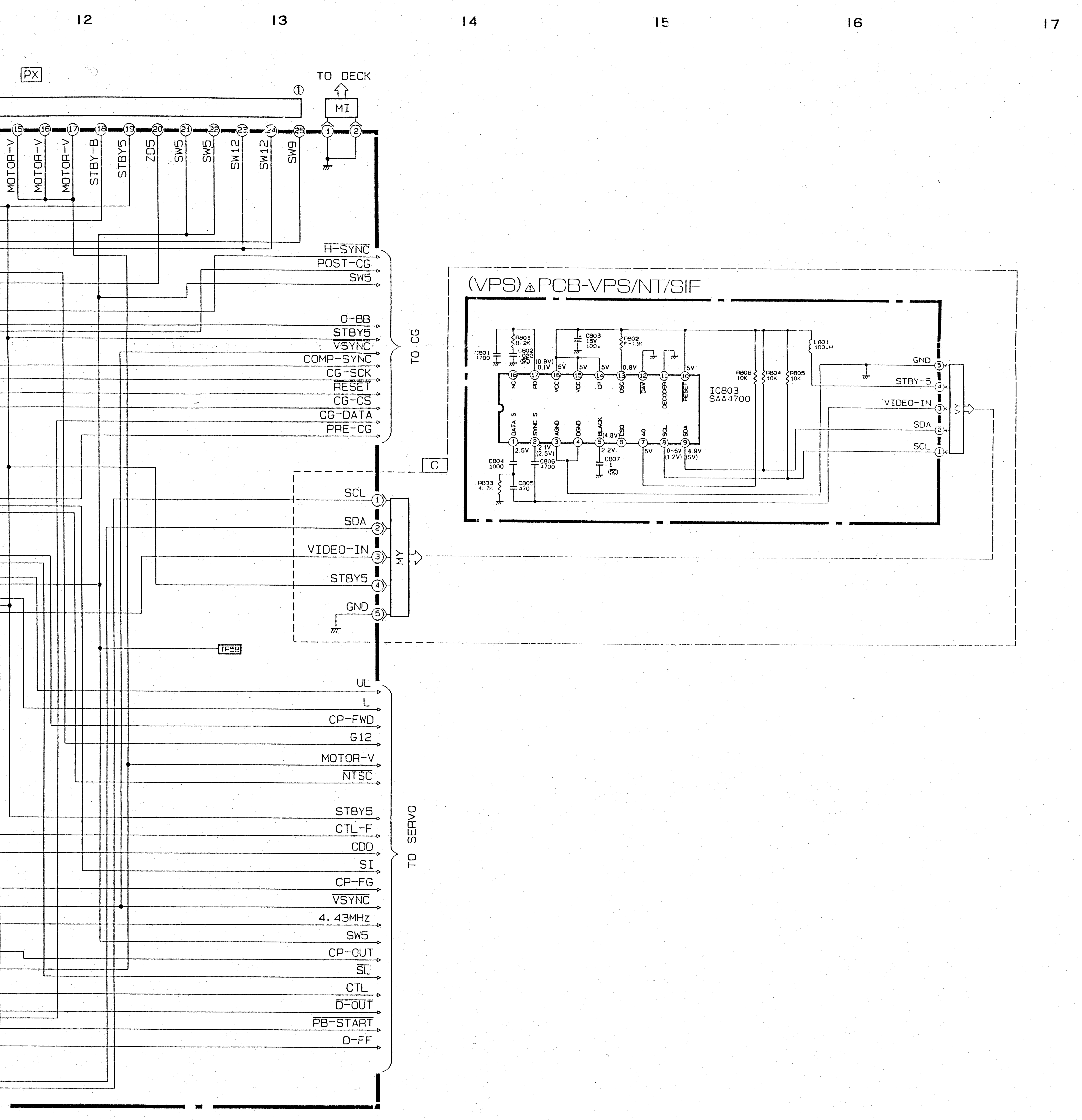
DTC124ES/UN4212



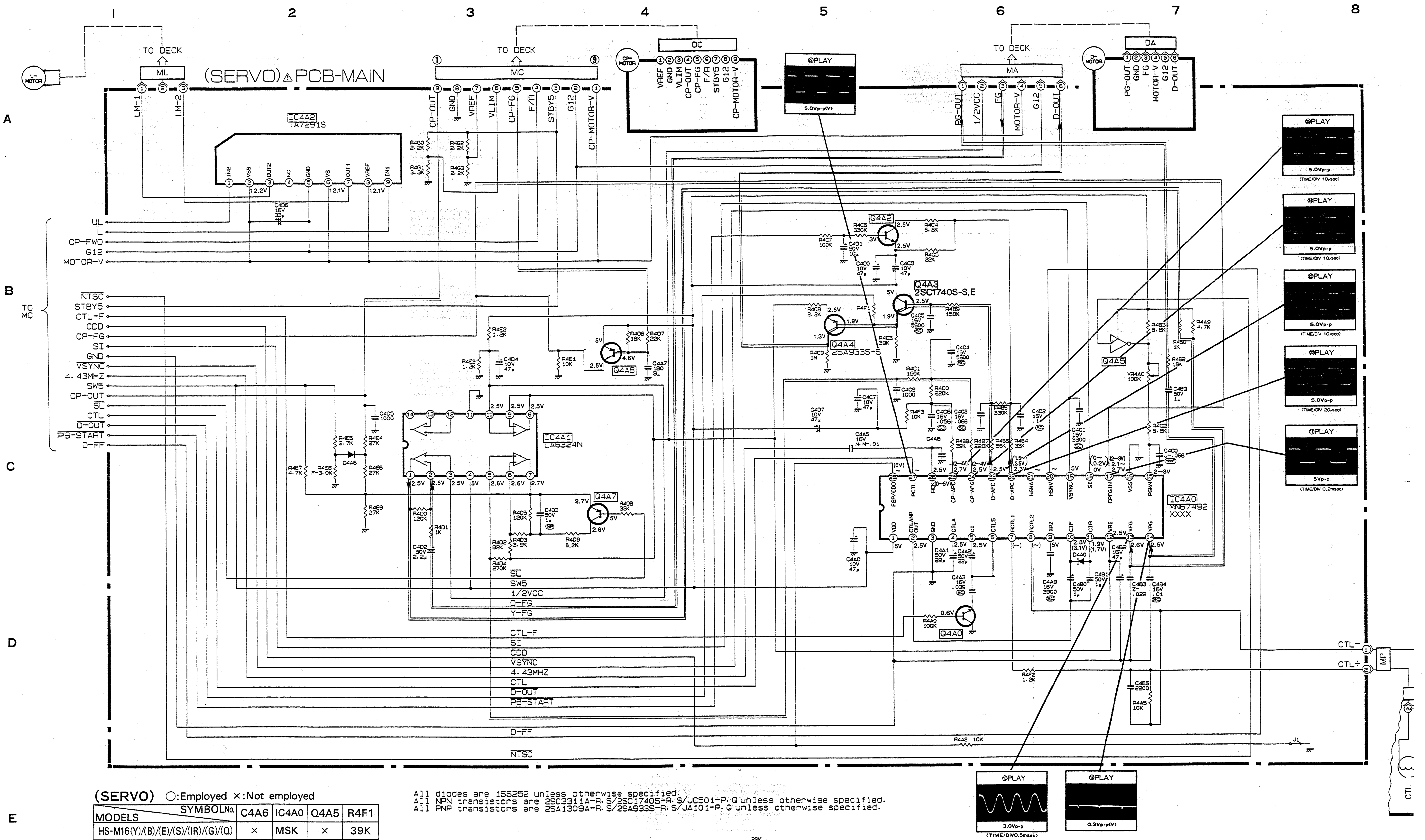
DTA124ES/UN4112

(MC) ○:Employed ×:Not employed

MODELS \ SYMBOL No.	A AREA	C AREA	J1	J2	J3	R5D6	R5D8	R5K3	R5X0
HS-M16(Y)/(E)/(S)/(IR)/(P)/(Q)	×	×	×	○	○	×	×	×	○
HS-M16(B)	×	×	○	×	○	×	×	○	×
HS-M16(G)	×	○	×	○	○	×	×	×	○
HS-M16(T)(M)	×	×	×	○	○	×	○	×	○
HS-MX2(A)/(NZ)	×	×	×	○	○	×	○	×	○
HS-MX1(MKII)	×	×	×	○	○	×	×	×	○


12
13
14
15
16
17
PX
TO DECK
MI
①
MOTOR-V
MOTOR-V
MOTOR-V
STBY-B
STBY5
ZD5
SW5
SW5
SW12
SW12
SW9
H-SYNC
POST-CG
SW5
O-BB
STBY5
VSYNC
COMP-SYNC
CG-SCK
RESET
CG-CS
CG-DATA
PRE-CG
TO CG
(VPS) ⚠PCB-VPS/NT/SIF
C801 1700
R801 8.2K
C802 .022
C803 15V 100μ
R802
L801 100μH
R806 10K
R804 10K
R805 10K
IC803
SAA4700
NC
PD
VCC
VCC
CP
OSC
DAV
DECODER
RESET
DATA S
SYNC S
AGND
DGND
BLACK
CSO
AO
SCL
SDA
(0.9V) 0.1V
5V
5V
5V
0.8V
5V
2.5V
2.1V (2.5V)
(4.8V)
2.2V
5V
0~5V (1.2V)
4.9V (5V)
C804 1000
C806 4700
C807 1
R803 4.7K
C805 470
GND
STBY-5
VIDEO-IN
SDA
SCL
VY
C
SCL
SDA
VIDEO-IN
STBY5
GND
MY
TP58
UL
L
CP-FWD
G12
MOTOR-V
NTSC
STBY5
CTL-F
CDD
SI
CP-FG
VSYNC
4.43MHz
SW5
CP-OUT
SL
CTL
D-OUT
PB-START
D-FF
TO SERVO

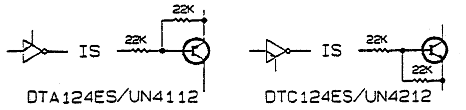
J3	R5D6	R5D8	R5K3	R5XO
○	×	×	×	○
○	×	×	○	×
○	×	×	×	○
○	×	○	×	○
○	×	○	×	○
○	×	×	×	○


1
2
3
4
5
6
7
8
A
B
C
D
E
L-MOTOR
TO DECK
ML
(SERVO)⚠PCB-MAIN
LM-1
LM-2
IC4A2
TA7291S
IN2
VSS
OUT2
NC
GND
VS
OUT1
VREF
IN1
12.2V
12.1V
12.1V
C4D6 16V 33μ
TO DECK
MC
CP-OUT
GND
VREF
VLIM
CP-FG
F/R
STBY5
G12
CP-MOTOR-V
R4G0 2.2K
R4G1 3.9K
R4G2 2.2K
R4G3 2.2K
CP-MOTOR
DC
VREF
GND
VLIM
CP-OUT
CP-FG
F/R
STBY5
G12
CP-MOTOR-V
ⓅPLAY
5.0Vp-p(V)
TO DECK
MA
PG-OUT
1/2VCC
FG
MOTOR-V
G12
D-OUT
D-MOTOR
DA
PG-OUT
GND
FG
MOTOR-V
G12
D-OUT
UL
L
CP-FWD
G12
MOTOR-V
TO MC
NTSC
STBY5
CTL-F
CDD
CP-FG
SI
GND
VSYNC
4.43MHZ
SW5
CP-OUT
SL
CTL
D-OUT
PB-START
D-FF
Q4A2
R4C5 330K
R4C7 100K
C4D1 50V 10μ
C4D0 10V 47μ
C4C8 10V 47μ
R4C4 6.8K
R4C5 22K
3V
2.5V
2.5V
Q4A3
2SC1740S-S,E
R4C8 2.2K
R4F1
R4B9 150K
C4C5 16V 5600
C4C4 16V 5600
R4C3 39K
R4C9 1M
Q4A4
2SA933S-S
1.3V
1.9V
1.9V
5V
R4E2 1.2K
R4E3 1.2K
C4D4 10V 47μ
R4E1 10K
R4D6 18K
R4D7 22K
C4A7 180 SL
Q4A8
4.6V
2.5V
5V
C4D5 1000
R4E5 2.7K
R4E4 27K
D4A6
R4E7 4.7K
R4E8 F-3.0K
R4E6 27K
R4E9 27K
IC4A1
LA6324N
2.5V
2.5V
2.5V
2.6V
2.6V
2.7V
R4D0 120K
R4D1 1K
C4D2 50V 2.2μ
R4D5 120K
C4D3 50V 1μ
R4D2 82K
R4D3 3.9K
R4D4 270K
R4D9 8.2K
R4D8 33K
Q4A7
2.7V
5V
2.6V
SL
SW5
1/2VCC
D-FG
Y-FG
CTL-F
SI
CDD
VSYNC
4.43MHZ
CTL
D-OUT
PB-START
D-FF
NTSC
R4C1 150K
R4C0 220K
C4C9 1000
C4C7 10V 47μ
C4D7 10V 47μ
R4F3 10K
C4C6 16V .056
C4C3 16V .068
C4A5 16V M.N-.01
C4A6
R4B8 39K
R4B7 220K
R4B6 56K
R4B5 330K
R4B4 33K
C4C2 16V .1
C4C1 16V 3300
Q4A5
R4B3 6.8K
R4A9 4.7K
R4B0 1K
R4B2 18K
VR4A0 100K
C4B9 50V 1μ
R4C2 6.8K
C4C0 .068
IC4A0
MN67492
XXXX
FSP/CDD
PCTL
PCK
CP-AFC
CP-APC
D-AFC
D-APC
HSMA
HSWI
VSYNC
SI
OFFG/IN
VSS
PGIN
VDD
CTL AMP OUT
GND
CTLA
CI
CTLS
RCTL1
RCTL2
TPZ
CIF
CIR
VRI
YFG
VPG
(0V)
2.5V
(0~5V)
2.7V
(2~4V)
2.5V
(1.5~3.5V)
2.3V
5V
(0~0.2V)
0V
(2~3V)
2.1~2.7V
2~3V
5V
2.5V
2.5V
2.5V
(~)
(~)
5V
2.8V (3.1V)
1.9V (1.7V)
2.5V
2.6V
2.5V
C4A0 10V 47μ
C4A1 50V 22μ
C4A2 50V 22μ
C4A3 16V .039
D4A0
C4A9 16V 3900
C4B0 50V 1μ
C4B1 50V 1μ
C4B2 16V 47μ
C4B3 Z-.022
C4B4 16V .01
R4A0 100K
0.6V
Q4A0
R4F2 1.2K
C4B5 2200
R4A5 10K
R4A2 10K
J1
CTL-
CTL+
MP
CTL
ⒶPLAY
5.0Vp-p
(TIME/DIV 10μsec)
ⒷPLAY
5.0Vp-p
(TIME/DIV 10μsec)
ⒸPLAY
5.0Vp-p
(TIME/DIV 10μsec)
ⒹPLAY
5.0Vp-p
(TIME/DIV 20μsec)
ⒺPLAY
5Vp-p
(TIME/DIV 0.2msec)
ⒻPLAY
3.0Vp-p
(TIME/DIV0.5msec)
ⒼPLAY
0.3Vp-p(V)

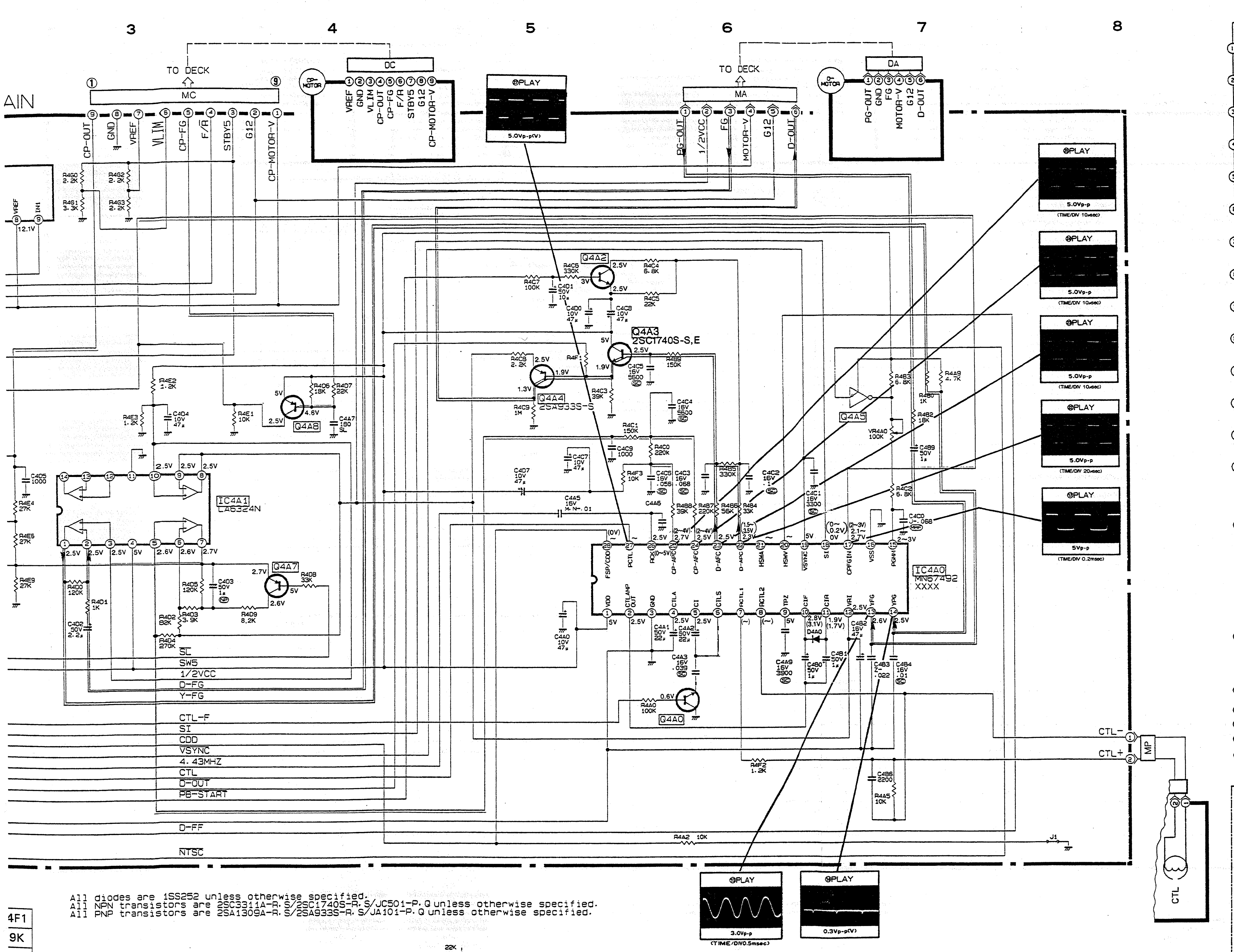
(SERVO) ○:Employed ×:Not employed

MODELS \ SYMBOL No.	C4A6	IC4A0	Q4A5	R4F1
HS-M16(Y)/(B)/(E)/(S)/(IR)/(G)/(Q)	×	MSK	×	39K
HS-M16(P)/(T)/(M)	×	MSK	○	39K
HS-MX2(A)/(NZ)	×	MSK	×	39K
HS-MX1(MXII)	×	MSK	×	39K

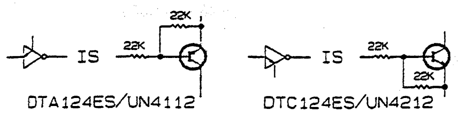
All diodes are 1SS252 unless otherwise specified.
All NPN transistors are 2SC3311A-R·S/2SC1740S-R·S/JC501-P·Q unless otherwise specified.
All PNP transistors are 2SA1309A-R·S/2SA933S-R·S/JA101-P·Q unless otherwise specified.


IS
22K
22K
DTA124ES/UN4112
IS
22K
22K
DTC124ES/UN4212

Drum Servo System
Capstan Servo System


3
4
5
6
7
8
TO DECK
MC
DC
MA
DA
CP-MOTOR
D-MOTOR
CP-OUT
GND
VREF
VLIM
CP-FG
F/R
STBY5
G12
CP-MOTOR-V
VREF
GND
VLIM
CP-OUT
CP-FG
F/R
STBY5
G12
CP-MOTOR-V
PG-OUT
1/2VCC
FG
MOTOR-V
G12
D-OUT
PG-OUT
GND
FG
MOTOR-V
G12
D-OUT
⑦PLAY
5.0Vp-p(V)
⑧PLAY
⑨PLAY
⑩PLAY
⑫PLAY
⑬PLAY
5.0Vp-p
5Vp-p
TIME/DIV 10msec
TIME/DIV 20msec
TIME/DIV 0.2msec
⑪PLAY
3.0Vp-p
TIME/DIV0.5msec
⑭PLAY
0.3Vp-p(V)
Q4A2
Q4A3
2SC1740S-S,E
Q4A4
2SA933S-S
Q4A5
Q4A7
Q4A8
Q4A0
IC4A1
LA6324N
IC4A0
MN67492
XXXX
FSP/CDD
PCTL
PCIN
CP-AFC
CP-AFC
D-AFC
D-AFC
HSW
HSW
VSYNC
SI
CPFGIN
VSS
PGIN
VDD
CTL AMP OUT
GND
CTLA
CI
CTLS
RCTL1
RCTL2
TPZ
CIF
CIR
VRI
YFG
YPG
SC
SW5
1/2VCC
D-FG
Y-FG
CTL-F
SI
CDD
VSYNC
4.43MHZ
CTL
D-OUT
PB-START
D-FF
NTSC
CTL-
CTL+
MP
CTL
J1
R4A2 10K
R4F2 1.2K
R4A5 10K
C4B6 2200
VREF
IN1
12.1V
AIN
4F1
9K
9K
9K
9K

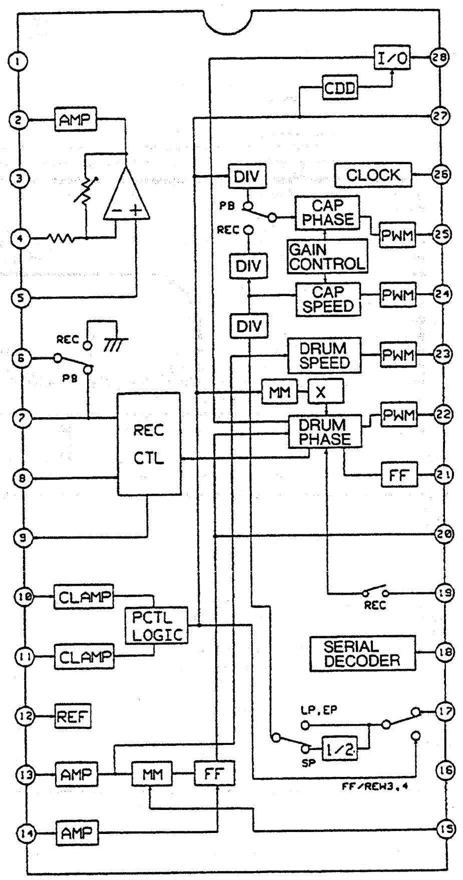
All diodes are 1SS252 unless otherwise specified.
All NPN transistors are 2SC3311A-R.S/2SC1740S-R.S/JC501-P.Q unless otherwise specified.
All PNP transistors are 2SA1309A-R.S/2SA933S-R.S/JA101-P.Q unless otherwise specified.


IS
22K
22K
DTA124ES/UN4112
IS
22K
22K
DTC124ES/UN4212

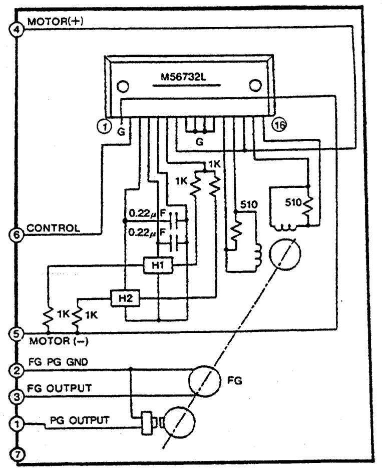
Drum Servo System

Capstan Servo System

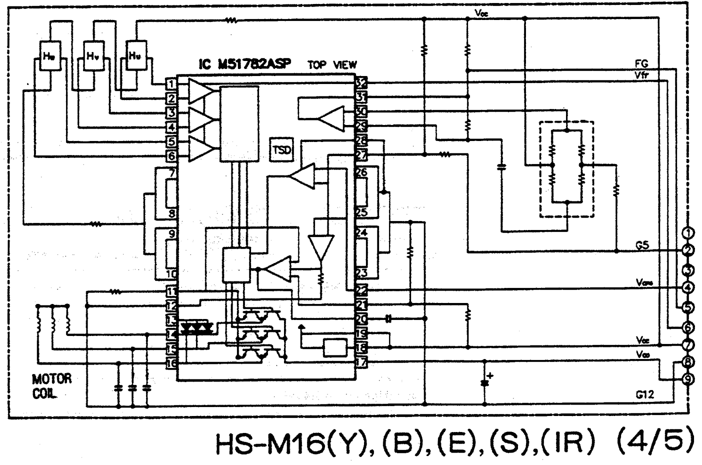
IC4A0


I/O
CDD
AMP
DIV
CLOCK
PB
REC
CAP PHASE
PWM
DIV
GAIN CONTROL
CAP SPEED
DIV
DRUM SPEED
MM
X
DRUM PHASE
REC CTL
FF
CLAMP
PCTL LOGIC
CLAMP
SERIAL DECODER
REF
LP, EP
1/2
SP
AMP
MM
FF
FF/REW3, 4
AMP

DRUM MOTOR

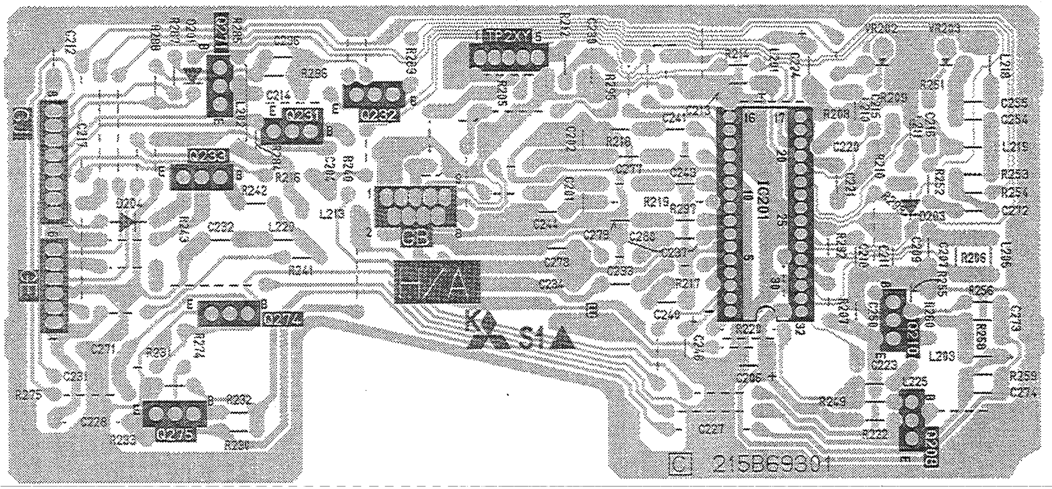

MOTOR(+)
M56732L
CONTROL
MOTOR (-)
FG PG GND
FG OUTPUT
PG OUTPUT
FG
H1
H2

CAPSTAN MOTOR

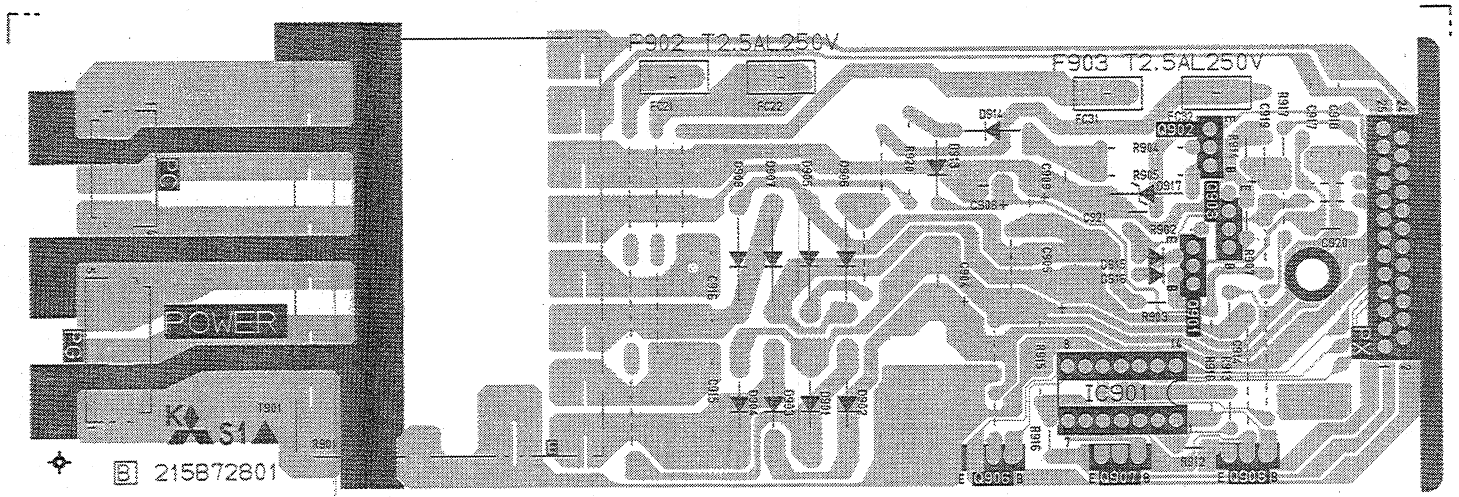

IC M51782ASP
TOP VIEW
TSD
FG
Vfr
G5
Vcc
Vcc
Vm
G12
MOTOR COIL

MBOL NO.	ADDRESS
P9B	B－3
P9C	C－3
PGND	D－7
R101	B－3
R2A0	A－4
R2A1	A－4
R2A2	A－4
R2A3	A－6
R2A5	A－6
R310	D－2
R311	C－3
R4A0	C－4

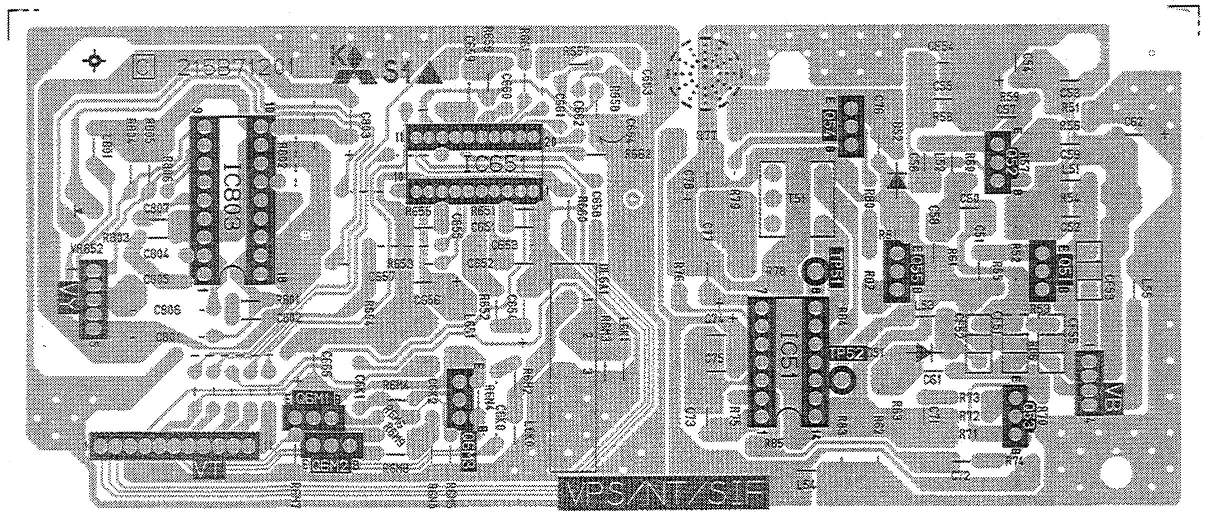
PCB-HEAD AMP


IC201
Q231
Q232
Q233
Q274
Q275
Q208
Q210
H/A
GB
S1
C 215B69301

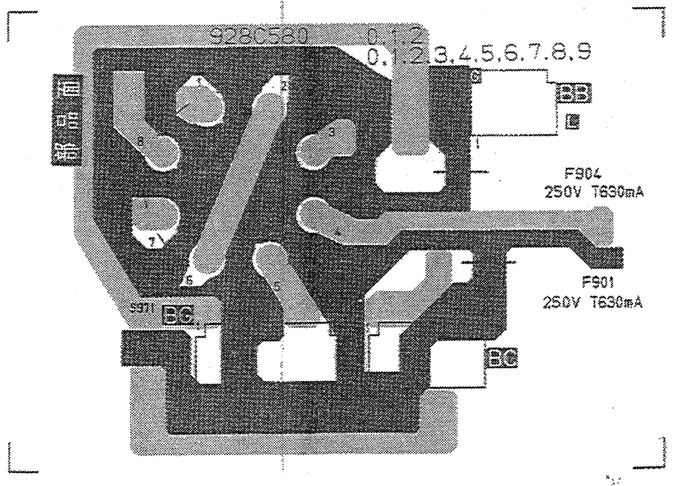
PCB-POWER
(HS-M16(P) only)


F902 T2.5AL250V
F903 T2.5AL250V
POWER
IC901
Q902
Q903
Q906
Q907
Q908
S1
B 215B72801

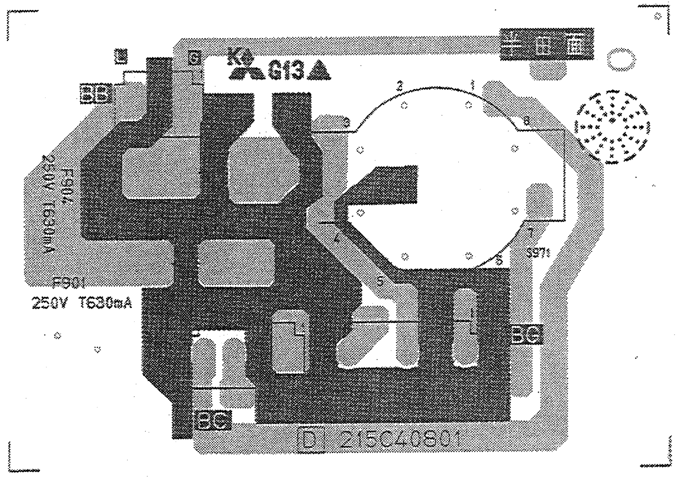
PCB-VPS/NT/SIF
(HS-M16(T), (P), (M), HS-MX1(MKⅡ) only)


C 215B71201
S1
IC803
IC651
IC51
VPS/NT/SIF

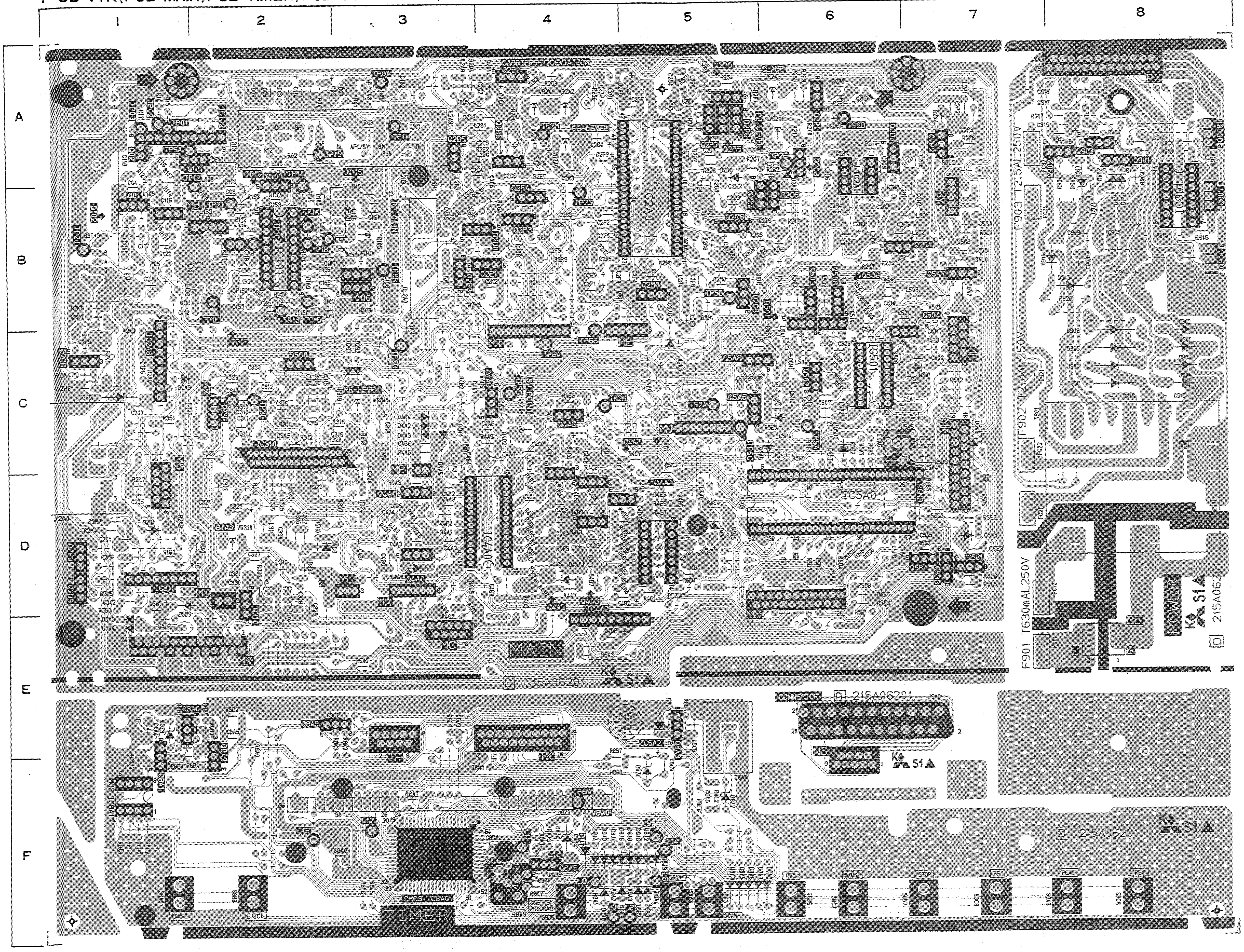
PCB-VOLTAGE SELECTOR
(HS-M16(P) only)
(COMPONENT SIDE)


928C580
0.1.2
0.1.2.3.4.5.6.7.8.9
BB
BC
F904
250V T630mA
F901
250V T630mA
S971

(COPPER SIDE)

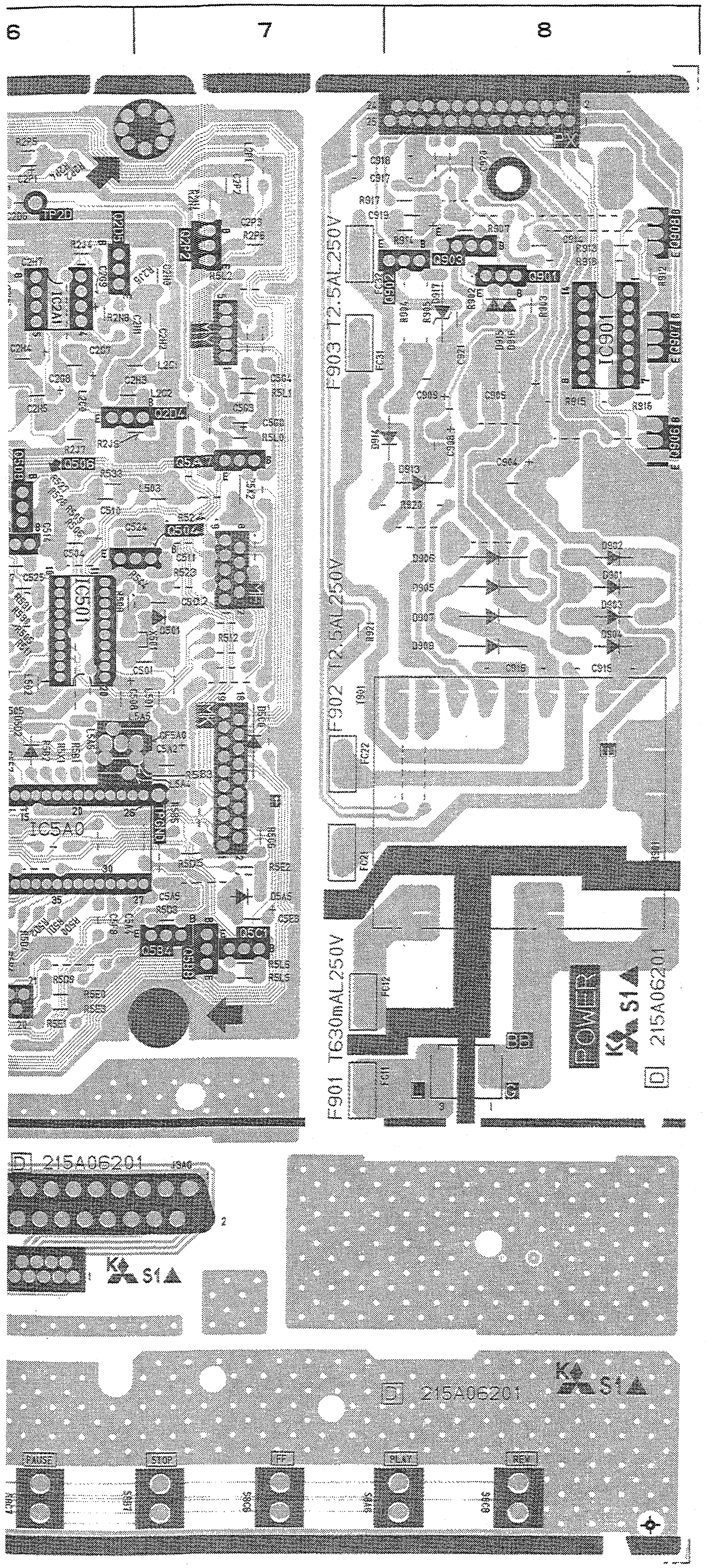

G13
BB
BC
F904
250V T630mA
F901
250V T630mA
S971
D 215C40801

PCB-VTR(PCB-MAIN, PCB-TIMER, PCB-CONNECTOR, PCB-POWER)


1
2
3
4
5
6
7
8
A
B
C
D
E
F
MAIN
TIMER
CONNECTOR
POWER
215A06201
S1
IC101
IC2A0
IC310
IC4A0
IC5A0
IC501
IC901
IC311
IC4A2
IC8A0
CMOS IC8A0
F901 T630mAL250V
F902 T2.5AL250V
F903 T2.5AL250V
CARRIER SET
DEVIATION
CLAMP
EE LEVEL
PB LEVEL
RF GAIN
BIAS
POWER
EJECT
REC
PAUSE
STOP
FF
PLAY
REW
SCAN
ONE KEY PROGRAM

SYMBOL NO.	ADDRESS
D2A3	A – 6
D2A6	C – 5
D2A9	C – 1
D2B0	C – 1
D2B1	D – 1
D2B2	C – 3
D2B3	C – 3
D2D0	A – 5
D4A0	D – 3
D4A1	D – 4
D4A2	C – 3
D4A3	C – 3
D4A4	C – 3
D4A5	C – 3
D4A6	D – 5
D501	C – 7
D5A0	C – 6
D5A3	E – 1
D5A4	E – 1
D5A5	D – 7
D5A6	C – 5
D5B9	D – 1
D5C0	C – 7
D5C1	C – 5
D5C9	D – 2
D5D2	C – 6
D8A3	F – 5
D8A5	F – 5
D8A6	F – 5
D8A7	F – 5
D8A8	F – 5
D8B0	F – 4
D8B1	F – 4
D8B2	F – 5
D8B3	F – 5
D8J0	F – 4
D8J1	F – 4
D8J2	F – 5
D8J3	F – 5
D8J4	F – 4
D8J5	F – 4
D8J6	F – 5
D8J7	F – 4
D8J8	F – 4
D8Z0	F – 4
D8Z1	F – 5
D8Z2	F – 5
D8Z3	E – 1
D901	C – 8
D902	C – 8
D903	C – 8
D904	C – 8
D905	C – 8
D906	C – 8
D907	C – 8
D908	C – 8
D913	B – 8
D914	B – 7
D915	A – 8
D916	A – 8

SYM N
D9
IC1
IC1
IC2
IC2
IC2
IC3
IC3
IC4
IC4
IC4
IC5
IC5
IC8
IC8
IC8
IC9
Q0
Q0
Q1
Q1
Q1
Q1
Q1
Q2
Q2
Q2
Q2
Q2
Q2
Q2
Q2
Q2
Q2
Q2
Q2
Q2
Q2
Q2
Q2
Q2
Q2
Q2
Q2
Q2
Q2
Q2
Q2
Q2
Q2
Q2
Q3
Q4
Q4
Q4
Q4
Q4
Q4
Q4


6
7
8
IC901
IC501
IC5A0
F903 T2.5AL250V
F902 T2.5AL250V
F901 T630mAL250V
POWER
S1
215A06201
PAUSE
STOP
FF
PLAY
REW

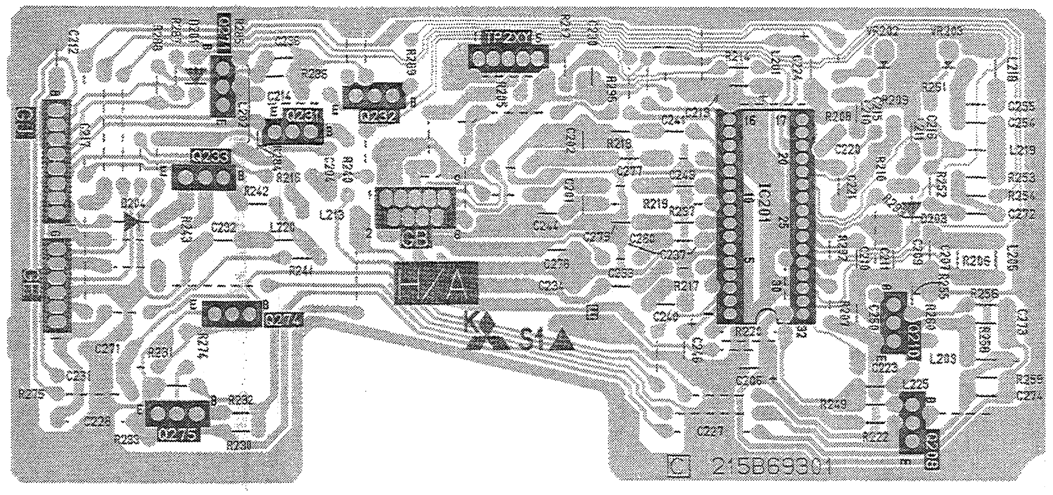
SYMBOL NO.	ADDRESS
D2A3	A – 6
D2A6	C – 5
D2A9	C – 1
D2B0	C – 1
D2B1	D – 1
D2B2	C – 3
D2B3	C – 3
D2D0	A – 5
D4A0	D – 3
D4A1	D – 4
D4A2	C – 3
D4A3	C – 3
D4A4	C – 3
D4A5	C – 3
D4A6	D – 5
D501	C – 7
D5A0	C – 6
D5A3	E – 1
D5A4	E – 1
D5A5	D – 7
D5A6	C – 5
D5B9	D – 1
D5C0	C – 7
D5C1	C – 5
D5C9	D – 2
D5D2	C – 6
D8A3	F – 5
D8A5	F – 5
D8A6	F – 5
D8A7	F – 5
D8A8	F – 5
D8B0	F – 4
D8B1	F – 4
D8B2	F – 5
D8B3	F – 5
D8J0	F – 4
D8J1	F – 4
D8J2	F – 5
D8J3	F – 5
D8J4	F – 4
D8J5	F – 4
D8J6	F – 5
D8J7	F – 4
D8J8	F – 4
D8Z0	F – 4
D8Z1	F – 5
D8Z2	F – 5
D8Z3	E – 1
D901	C – 8
D902	C – 8
D903	C – 8
D904	C – 8
D905	C – 8
D906	C – 8
D907	C – 8
D908	C – 8
D913	B – 8
D914	B – 7
D915	A – 8
D916	A – 8

SYMBOL NO.	ADDRESS
D917	A – 8
IC101	B – 2
IC102	A – 1
IC2A0	B – 5
IC2A1	A – 6
IC2A3	C – 1
IC310	C – 2
IC311	D – 1
IC4A0	D – 4
IC4A1	D – 5
IC4A2	E – 4
IC501	C – 6
IC5A0	D – 6
IC8A0	F – 3
IC8A1	F – 1
IC8A2	E – 5
IC901	B – 8
Q01	B – 1
Q02	A – 1
Q101	A – 1
Q102	B – 1
Q107	A – 2
Q115	B – 3
Q116	B – 3
Q2B1	A – 4
Q2B5	A – 3
Q2B6	A – 4
Q2C3	A – 6
Q2C4	B – 5
Q2C5	B – 6
Q2C6	B – 5
Q2C8	B – 5
Q2D0	B – 3
Q2D4	B – 6
Q2D5	A – 6
Q2D6	C – 1
Q2D9	D – 1
Q2E0	D – 1
Q2E1	B – 4
Q2E3	B – 3
Q2M0	B – 5
Q2P0	A – 5
Q2P1	A – 6
Q2P2	A – 7
Q2P3	B – 4
Q2P4	B – 4
Q2P5	A – 5
Q2P6	A – 5
Q2P7	A – 5
Q310	D – 2
Q4A0	D – 3
Q4A1	D – 3
Q4A2	D – 4
Q4A3	D – 4
Q4A4	D – 4
Q4A5	C – 4
Q4A7	D – 4
Q4A8	C – 4

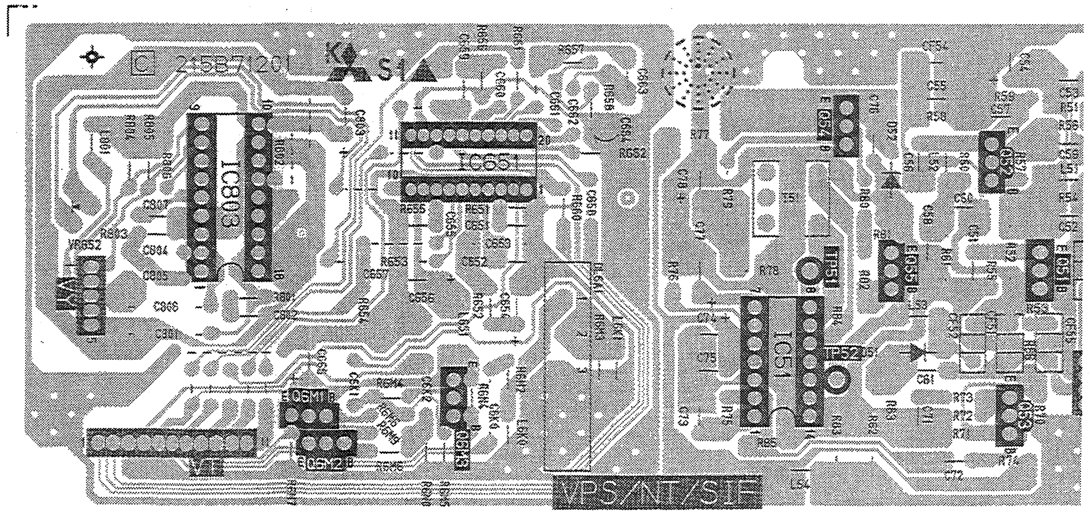
SYMBOL NO.	ADDRESS
Q501	B – 6
Q502	C – 6
Q503	B – 6
Q504	C – 6
Q506	B – 6
Q508	B – 6
Q5A5	C – 5
Q5A7	B – 7
Q5A8	C – 5
Q5B4	D – 7
Q5B8	D – 7
Q5C0	C – 2
Q5C1	D – 7
Q8A0	E – 1
Q8A1	F – 1
Q8A2	E – 2
Q8A5	F – 4
Q8A8	E – 5
Q8A9	E – 2
Q901	A – 8
Q902	A – 8
Q903	A – 8
Q906	B – 8
Q907	B – 8
Q908	A – 8
TP01	A – 1
TP02	A – 1
TP03	A – 1
TP04	A – 3
TP11	A – 3
TP12	A – 1
TP14	A – 2
TP15	A – 2
TP16	B – 2
TP1A	B – 2
TP1B	B – 2
TP1C	B – 2
TP1F	B – 2
TP1G	B – 2
TP1L	B – 2
TP1S	B – 2
TP21	B – 2
TP2A	C – 5
TP2D	A – 6
TP2E	A – 6
TP2H	C – 4
TP2J	B – 1
TP2M	A – 4
TP2S	B – 4
TP3E	C – 2
TP3F	C – 2
TP5A	C – 6
TP5B	B – 5
TP5C	C – 5
TP5D	C – 4
TP6A	C – 4
TP6B	C – 4
TP8A	F – 4
TP9A	A – 1

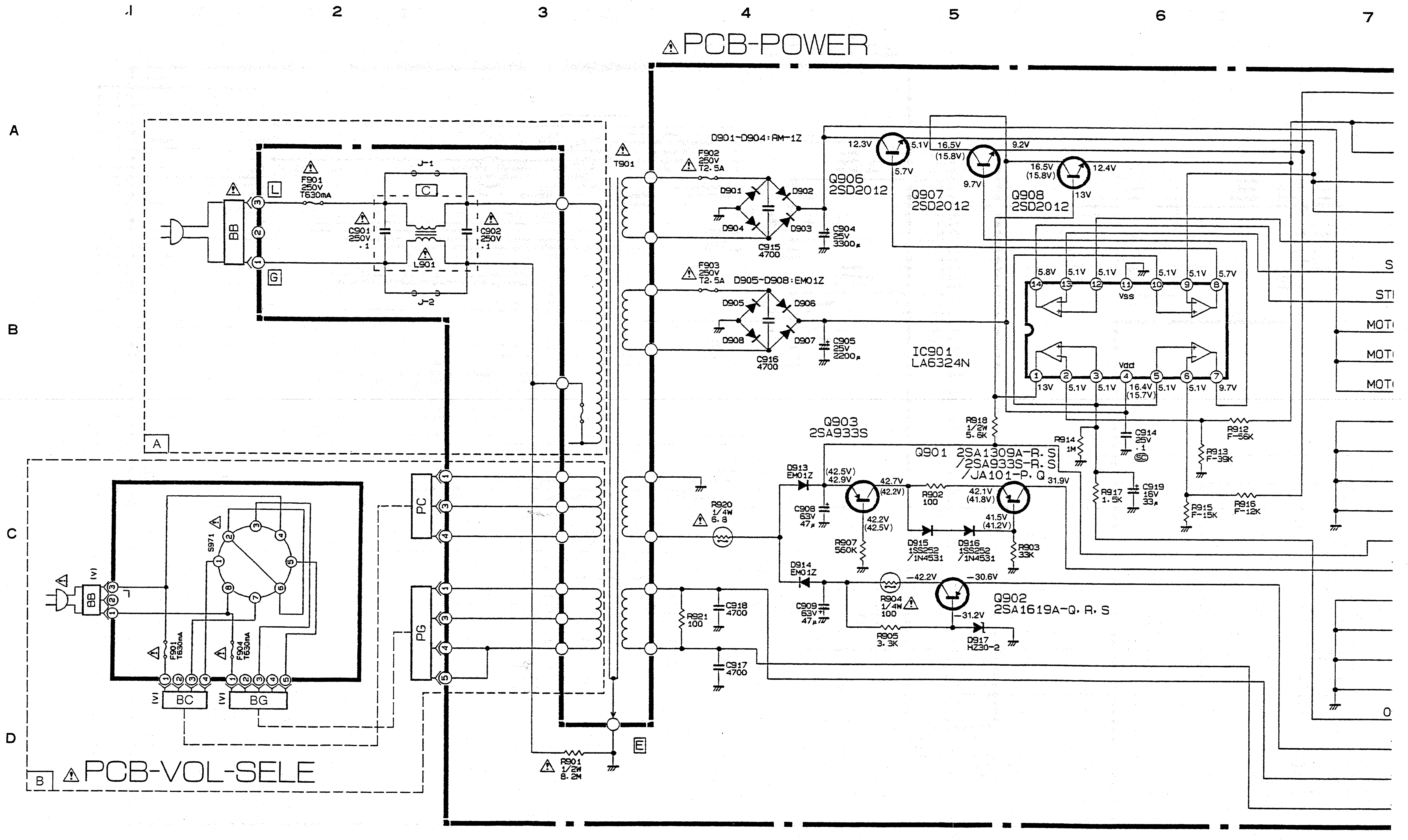
SYMBOL NO.	ADDRESS
TP9B	B – 3
TP9C	C – 3
TPGND	D – 7
VR101	B – 3
VR2A0	A – 4
VR2A1	A – 4
VR2A2	A – 4
VR2A3	A – 6
VR2A5	A – 6
VR310	D – 2
VR311	C – 3
VR4A0	C – 4

PCB-HEAD AMP


IC201
H/A
S1
215B69301

PCB-VPS/NT/SIF
(HS-M16(T),(P),(M), HS-MX1(MKⅡ) only)


215B71201
S1
IC803
IC651
IC51
VPS/NT/SIF


1
2
3
4
5
6
7
A
B
C
D
E
PCB-POWER
PCB-VOL-SELE
BB
L
G
F901
250V
T630mA
J-1
J-2
C
C901
250V
.1
C902
250V
.1
L901
T901
F902
250V
T2.5A
D901-D904:RM-1Z
D901
D902
D903
D904
C915
4700
C904
25V
3300μ
F903
250V
T2.5A
D905-D908:EM01Z
D905
D906
D907
D908
C916
4700
C905
25V
2200μ
12.3V
5.1V
5.7V
Q906
2SD2012
16.5V
(15.8V)
9.7V
9.2V
Q907
2SD2012
16.5V
(15.8V)
12.4V
13V
Q908
2SD2012
IC901
LA6324N
5.8V
5.1V
5.1V
5.1V
5.1V
5.7V
Vss
Vdd
13V
5.1V
5.1V
16.4V
(15.7V)
5.1V
5.1V
9.7V
S
STI
MOT
MOT
MOT
O
Q903
2SA933S
R918
1/2W
5.6K
R914
1M
C914
25V
.1
SC
R912
F-56K
R913
F-39K
Q901 2SA1309A-R.S
/2SA933S-R.S
/JA101-P.Q
D913
EM01Z
(42.5V)
42.9V
42.7V
(42.2V)
R902
100
42.1V
(41.8V)
31.9V
C908
63V
47μ
42.2V
(42.5V)
R907
560K
D915
1SS252
/1N4531
D916
1SS252
/1N4531
41.5V
(41.2V)
R903
33K
R917
1.5K
C919
16V
33μ
R915
F-15K
R916
F-12K
R920
1/4W
6.8
D914
EM01Z
C909
63V
47μ
R904
1/4W
100
-42.2V
-30.6V
Q902
2SA1619A-Q.R.S
-31.2V
R905
3.3K
D917
HZ30-2
R921
100
C918
4700
C917
4700
PC
PG
S971
BB
(V)
F901
T630mA
F904
T630mA
BC
BG
(V)
(V)
R901
1/2W
8.2M
E
A
B

(POWER) ○:Employed ×:Not employed

MODELS \ SYMBOL No.	A AREA	B AREA	C AREA	J-1	J-2	R921
HS-M16(Y)/(E)/(S)/(IR)/(T)/(M)	○	×	×	○	○	○
HS-MX2(A)/(NZ)	○	×	×	○	○	○
HS-MX1(MXII)	○	×	×	○	○	○
HS-M16(B)	○	×	×	○	○	○
HS-M16(G)	○	×	○	×	×	○
HS-M16(P)	×	○	×	×	×	×

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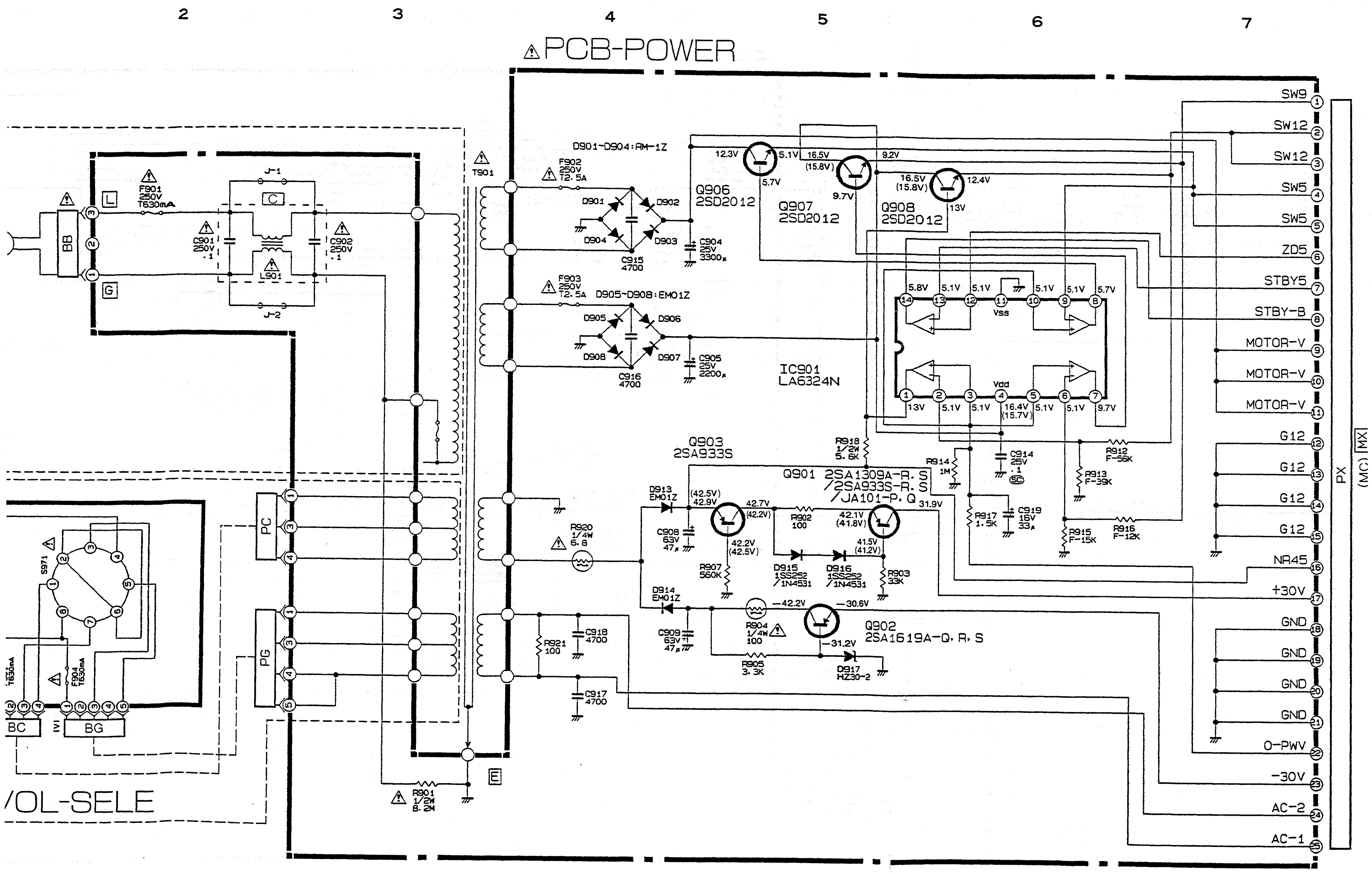
SERVICING PRECAUTION

SYMBOLS INDICATE COMPONENTS HAVING SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY AND PERFORMANCE. THEREFOR REPLACEMENT OF ANY SAFETY PARTS SHOULD BE IDENTICAL IN VALUE AND CHARACTERISTICS.

DON'T DEGRADE THE SAFETY OF THE VCR THROUGH IMPROPER SERVICING.


2
3
4
5
6
7
8
9
PCB-POWER
VOL-SELE
BB
L
G
F901 250V T630mA
C901 250V .1
C902 250V .1
L901
J-1
J-2
C
T901
E
R901 1/2W 8.2M
PC
PG
S971
F904 T630mA
BC
BG
D901-D904:AM-1Z
F902 250V T2.5A
D901
D902
D903
D904
C915 4700
C904 25V 3300μ
F903 250V T2.5A
D905-D908:EM01Z
D905
D906
D907
D908
C916 4700
C905 25V 2200μ
Q906 2SD2012
Q907 2SD2012
Q908 2SD2012
12.3V
5.1V
5.7V
16.5V (15.8V)
9.2V
9.7V
16.5V (15.8V)
12.4V
13V
IC901 LA6324N
Vss
Vdd
R918 1/2W 5.6K
R914 1M
C914 25V .1
R912 F-56K
R913 F-39K
R917 1.5K
C919 16V 33μ
R915 F-15K
R916 F-12K
Q903 2SA933S
Q901 2SA1309A-R.S /2SA933S-R.S /JA101-P.Q
31.9V
D913 EM01Z
C908 63V 47μ
R907 560K
R902 100
D915 1SS252 /1N4531
D916 1SS252 /1N4531
R903 33K
R920 1/4W 6.8
D914 EM01Z
C909 63V 47μ
R904 1/4W 100
R905 3.3K
Q902 2SA1619A-Q.R.S
D917 HZ30-2
R921 100
C918 4700
C917 4700
SW9
SW12
SW12
SW5
SW5
ZD5
STBY5
STBY-B
MOTOR-V
MOTOR-V
MOTOR-V
G12
G12
G12
G12
NR45
+30V
GND
GND
GND
GND
O-PWV
-30V
AC-2
AC-1
PX
(MC) MX

ER) ○:Employed ×:Not employed

S \ SYMBOL No.	A AREA	B AREA	C AREA	J-1	J-2	R921
(Y)/(E)/(S)/(IR)/(T)/(M)	○	×	×	○	○	○
X2(A)/(NZ)	○	×	×	○	○	○
X1(MXII)	○	×	×	○	○	○
16(B)	○	×	×	○	○	○
16(G)	○	×	○	×	×	○
16(P)	×	○	×	×	×	×

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SERVICING PRECAUTION

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DON'T DEGRADE THE SAFETY OF THE VCR THROUGH IMPROPER SERVICING.